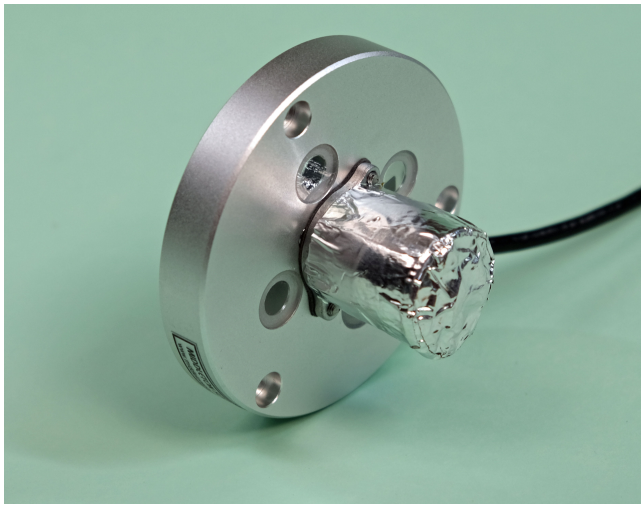
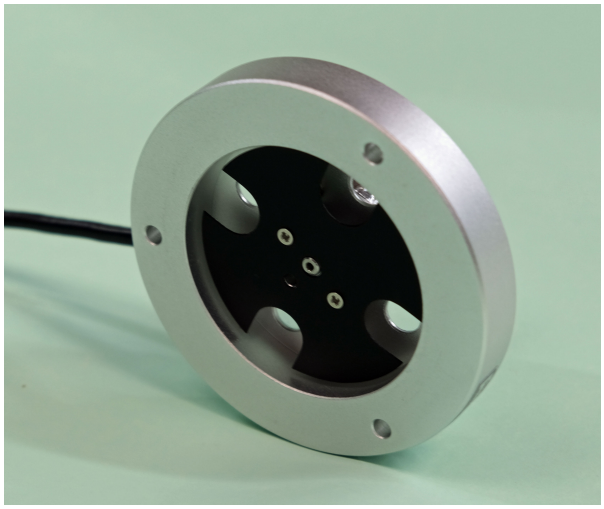
MIDDLETON SOLAR
SP02-L SHUTTER
APPLICATION NOTE

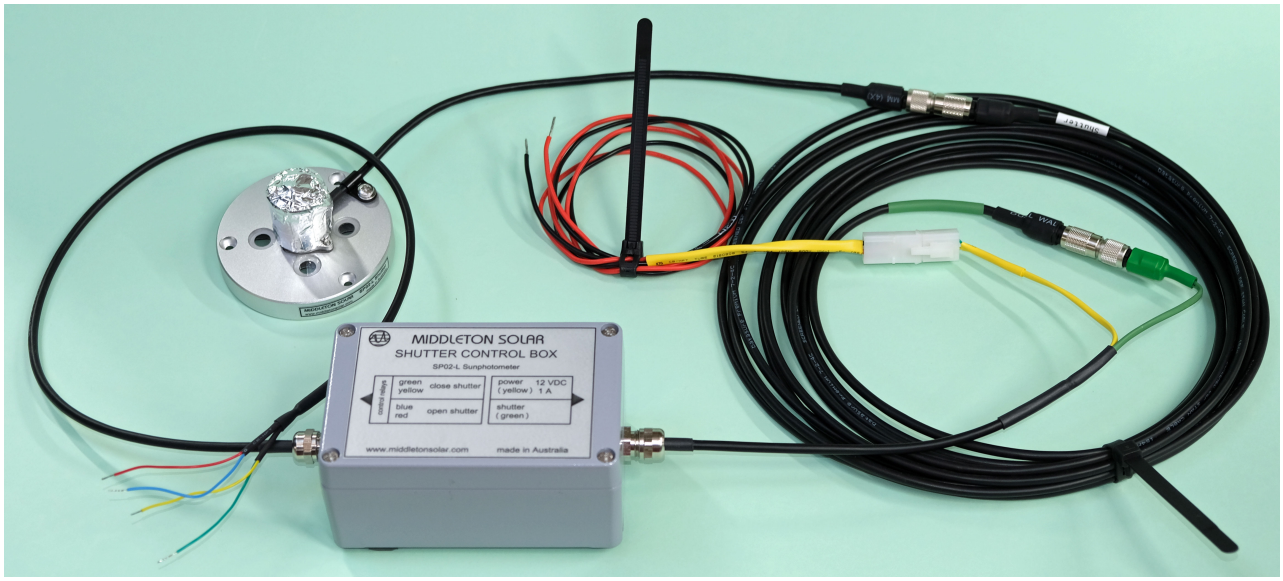
2024





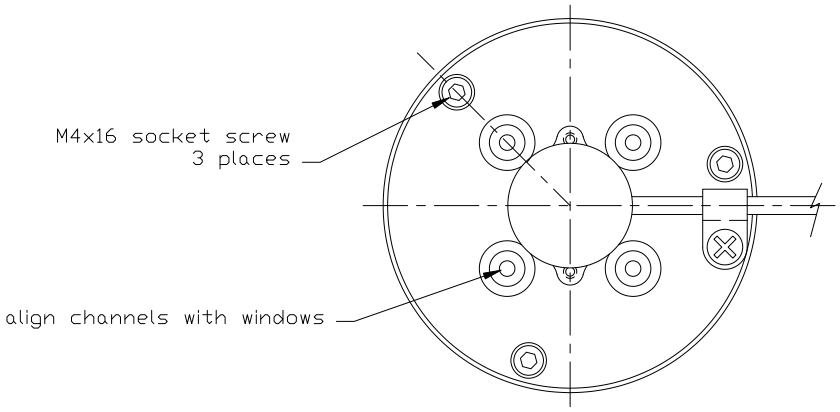
The **SP02-L Shutter** is an electromechanical mechanism to regulate the light entering a Middleton Solar SP02-L Sunphotometer. The Shutter replaces the standard Window Plate of the SP02-L. It contains a shutter-blade, actuated by a bi-directional solenoid. The rotary-solenoid is driven from a Control Box that accepts contact-closure commands to Open, or to Close. The commands can originate from manually operated push-switches, or can be programmed from a Data Acquisition System. The Shutter operates simultaneously on all four Sunphotometer channels.

Installation.
Connect the Shutter to the Control Box using the supplied 6m ‘green’ interface cable



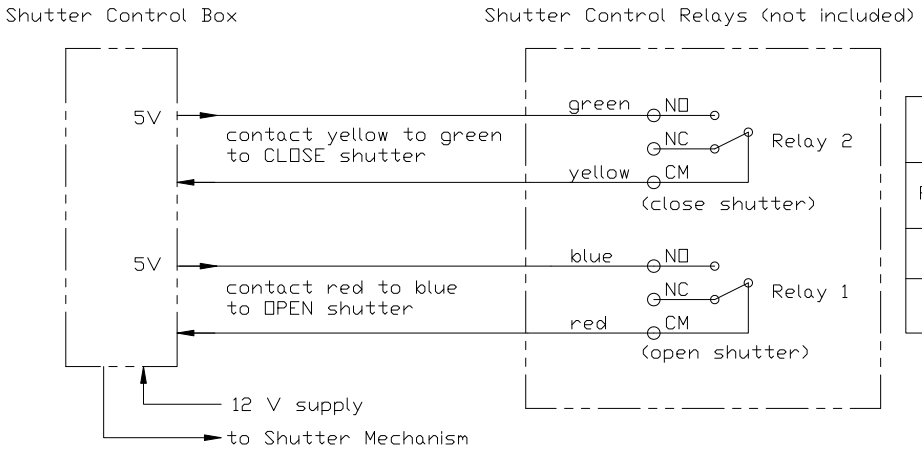
Attach the supplied ‘yellow’ 12V power cable to the Control Box.

Undo three socket-screws and remove the standard Window Plate from the front of the SP02-L Sunphotometer.



Fit the Shutter using three supplied M4x16 socket screws. Align the four Sunphotometer channels with the windows.

Operation. Connect the Control Box wires to a Data Acquisition System. There are two control pairs: Red & Blue for 'open; Yellow & Green for 'close'. Alternatively, these wires can be connected to manually operated momentary push-switches.



pulse (0.2s)		shutter state
Relay 1	Relay 2	
close	open	open
open	close	close

Connect the 'yellow' power cable to a 12 VDC supply (not included); red wire to +ve.

Maintenance. Keep the four windows clean and free from debris; use water and mild detergent only. Periodically change the desiccant inside the SP02-L.

Technical specification

response time	0.1s (typical)
operating temperature	0 to +40°C
ingress protection rating	IP65
power supply requirement	12 VDC, 1 A (peak), 5 mA (standby)
control-wire voltage (to Relay 1 & 2)	5 V (provided by Control Box)
windows	borosilicate glass, 1.75mm thick
construction	anodized aluminum; stainless steel
dimensions (Shutter mechanism)	84 mm diameter; 0.25 kg
shipping size & weight	24 x 24 x 20 cm; 1.5 kg