

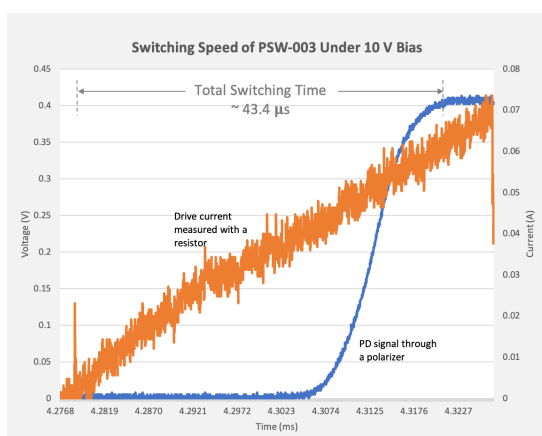
## PSW-003

### High-Speed Polarization Switch

Luna Innovations' all solid-state, high speed self-latching polarization switch can quickly and repeatably rotate the SOP of incoming light by a fixed angle, either 45 or 90 degrees, or convert an input linear polarization state to an output circular polarization state.

Both single mode and PM fiber pigtailed versions are available. With the PM option, the device functions as a TE to TM converter. Configuring the PM option with an input polarizer improves the PER of the axis-aligned output states.

The PSW-003 is electrically controlled with no moving parts, providing stable long-term performance, with good reliability and repeatability to meet the highly demanding requirements of field applications.



Switching speed of PSW-003 under 10 V Bias

#### KEY FEATURES

- Digitally switched SOP
- Fast switching time 45  $\mu$ s (typical)
- SOP repeatability 0.1°
- Self-latching
- Zero static power dissipation
- Compact
- Minimal heat generation

#### APPLICATIONS

- Polarization diversified detectors and sensors
- Polarization sensitive OCT
- Polarization metrology
- Polarization sensitive OTDR or OFDR
- PMD monitoring
- Fiber optic sensing

**High-speed solid state optical polarization switch  
with compact design and low loss**

## PERFORMANCE

PARAMETER	MIN.	TYPICAL	MAX.	UNITS
<b>Optical Characteristics</b>				
Operation Wavelength	1520	1550	1580	nm
Insertion Loss			0.5	dB
Return Loss			-55	dB
SOP Repeatability <sup>1</sup>		±0.1		deg
SOP Rotation Angle <sup>2</sup>		45 or 90±1		deg
<b>SOP Switching Time<sup>3</sup></b>				
At bias voltage 10 V	40	45	50	µs
At bias voltage 5 V	70	80	100	µs
At bias voltage 3.3 V	90	120	150	µs
Optical Power Handling			300	mW
<b>Physical Operating Conditions</b>				
Operating Temperature	0		50	°C
Storage Temperature	-40		85	°C
<b>Mechanical Properties</b>				
Dimension	41.5 mm (L) x 14.6 mm (W) x 11mm (H)			
Mounting Holes	2X #0-80 UNF-28, 3mm DEEP			
Fiber Jacket	900 µm loose tube			

**Note:** Values are referenced without connectors

1. The SOP repeatability is measured on the Poincaré sphere under a fixed measurement condition (static wavelength, temperature, and input polarization, with no fiber movement).
2. SOP rotation angles are specified in real space at 1550 nm and 23 °C. Angles on the Poincaré sphere are twice the real space angles.
3. Time interval between drive signal pulse leading edge and completion of SOP transition at room temperature (~23°C) using an H-bridge driver circuit.

## ORDERING

Catalog #	Wavelength	SOP Rotation	Fiber Type	Input Polarizer	Pigtail Length	Connector Type
PSW - 003	<input type="checkbox"/> <input type="checkbox"/> 15 – 1550 nm 13 – 1310 nm <sup>1</sup>	<input type="checkbox"/> <input type="checkbox"/> 90 = 90° 45 = 45° LCR = linear to RCP LCL = linear to LCP	<input type="checkbox"/> <input type="checkbox"/> SS – SM to SM PP – PM to PM PS = PM to SM	<input type="checkbox"/> (For PM PSW) 0 – No polarizer P – Input polarizer (slow axis)	<input type="checkbox"/> 1.0 – 1.0 m Specify	<input type="checkbox"/> <input type="checkbox"/> NC – no connector FC/PC FC/APC SC/PC SC/APC Specify
<b>Notes:</b> 1. 1310 nm coming soon						

Distribution in the UK & Ireland



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## CUSTOM AND OEM OPTIONS

### NOTES

\*For more detailed specification, refer to the PSW-003 technical specification sheet.

