

# All Fiber Low Loss Polarization Controller-RS232

low loss, all wavelength, high power



DATASHEET

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The FPOL series of All Fiber Polarization Controllers uses four independently step-motor-driven rotatable waveplates, implemented with four fiber looped paddles, to achieve full-range polarization control. It supports all fiber types across various wavelengths, offers low optical loss, high optical power handling, and is cost-effective. Designed for use as a scrambler or polarization controller, it features an automatic control circuit that interfaces with a polarimeter via four electrical sensor inputs to transform any incoming polarization state into a specific output state on the Poincaré sphere with high precision and repeatability. The unit includes an intuitive GUI accessible via RS232, a wall-pluggable DC power supply, and supports high-power optics and connectorized fibers. Customizable software and GUI are available upon request, along with a Python command set for advanced control.

## Features

- Four Rotations of Waveplates
- Built-In Encoder for Closed Loop Operation
- USB Computer Control
- User-Friendly Intuitive GUIs
- SM, PM, MM Fiber Option

## Applications

- Polarization transformation
- Automation of multi-polarization state analysis
- Quantum state tomography
- Polarization calibration
- Polarization state analyzer and controller
- Polarized fiber optic source
- Polarization extinction ratio controller
- PM fiber axes conversion
- Optical Interferometric systems
- Laser to fiber coupling and coherent detection

## Specifications

Parameter	Min	Typical	Max	Unit
Wavelength	400		2650	nm
Insertion Loss <sup>[1]</sup>	0.3	0.5	0.7	dB
Number of Rotating Paddles			4	
Homing Repeatability	0.1			°
Repeatability	0.1			°
Minimum Incremental Motion	0.1			°
Return Loss	55			dB
Response Time			1	s
Operating Optical Power		0.3	0.5	W
Operation Frequency	DC		0.5	Hz
Power Consumption			0.5	W
Power Input	4.5	5	5.5	DCV
Operating Temperature		-5 ~ 60		°C
Storage Temperature		-40 ~ 85		°C

### Notes:

- [1]. Excluding connectors. Connectors add 0.3dB each.
- [2]. @1550nm

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### Mechanical Dimensions (mm)

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\*Product dimensions may change without notice. This is sometimes required for non-standard specifications.

### Operation Instruction

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- Plug in the accompanied power supply
- Connect an input light and output
- Connect to a computer using the accompanied cable
- Load the accompany software (in a memory disk)
- Run the GUI

\* To control polarization in a full range on the Poincaré sphere: select  $\lambda/2$  waveplate,  $\lambda/4$  waveplate, and  $\lambda/2$  waveplate

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### Ordering Information

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1	1	<input type="checkbox"/>
Prefix	Type	Wavelength	Scrambler	Transformer	Fiber Type	Fiber Cover		Connector
<b>FPOL-</b>	Standard = 1 Special = 0	488 = 4 532 = 5 650 = 6 780 = 7 850 = 8 980 = 9 1060 = 1 1310 = 3 1550 = C 2000 = 2 Special = 0	Yes = SS Non = NN Special = 00	0.05m = 0A 0.5m = 05 1m = 10 10m = 20 100m = A1 200m = A2 Special = 00	<i>Select below</i>	0.9mm Tube = 1 Special = 0		FC/PC = 2 FC/APC = 3 SC/PC = 4 SC/APC = 5 ST/PC = 6 LC/PC = 7 LC/APC = 8 LC/UPC = U Special = 0

\* \$3950 integrated with a polarimeter for polarization transformation, converting into a fixed output polarization state

**Fiber Type Selection Table**

1	SMF-28	5	PM1550	M	MM 50/125μm
		D	PM1950	N	MM 62.5μm
		3	PM1310		
4	SM450	E	PM400		
A	SM1950	F	PM480		
6	SM600	G	PM630		
7	Hi780	H	PM850		
8	SM800	I	PM980		
9	SM980	J	PM780		
B	Hi1060	K	PM460		
C	SM400	L	PM405		