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HIGH SPEED ELECTRO-OPTICS POLARIZATION CONTROLLER-SCRAMBLER

PRELIMINARY

Features:

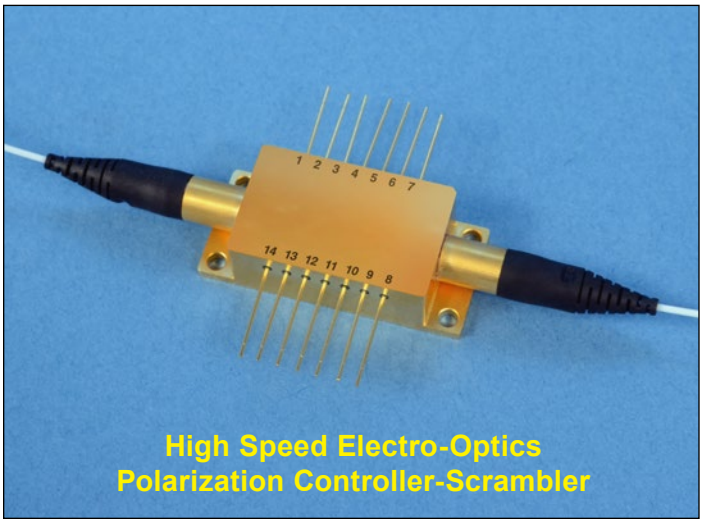
- Rapid response time (< 10 µs)
- Linear response
- Solid state crystals
- Low loss
- Flexible configuration
- Compact in size
- Wide operating wavelength
- Long operating lifetime

Applications:

- Polarization scrambling
- Polarization stabilization and management
- Polarization Mode Dispersion (PMD) mitigation
- Polarization Dependent Loss (PDL) mitigation
- Polarization Dependent Gain (PDG) mitigation
- PDL, DOP, and PMD measurement systems
- Interferometers and sensors
- Fiber lasers
- Polarization demultiplexing
- Test instrumentation
- OCT systems

Product Description:

OZ Optics' High Speed Electro-Optic Polarization Controller (EOPC) is based on a novel, low-loss high speed free space Electro-Optic crystal technology. It provides a simple, efficient means to quickly manipulate the state of polarization by applying an external voltage. High-Speed polarization state management is enabled using two to four crystals in a row with remarkably low loss, all housed in a compact and robust butterfly package. The device can be offered with 2, 3 or 4 crystals (depending on the customer requirement), and by applying external voltages one can change/manipulate/control the output polarization state. For endless polarization control, a device with 4 crystal elements is required while a 3 elements device will be sufficient for polarization scrambling mode operation. The compact, motionless and vibration free design allows fast linear response with less than 10 µs response time to the control signal. The controller's rapid response speed easily handles changes in polarization, caused by the external environment, and is highly suitable for polarization controlling and scrambling to either average PDL and PDG effects, or for making PMD, PDL or DOP measurements. This makes it ideal for precise test and measurement applications.



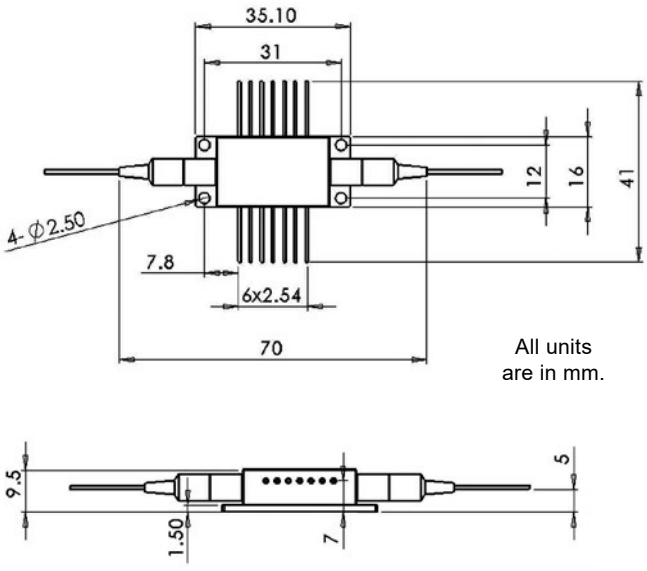


Figure 1. High Speed Electro-Optics Polarization Controller-Scrambler

Specifications: (tested at 23°C, controlled temperature)

Parameters	Values		
Optical Performances			
Operating Wavelength[1]	1064 nm, 1550 nm, 2000 nm		
	4 stages	3 stages	2 stages
Insertion Loss (IL)[2]	< 1.2 dB	< 1.1 dB	< 1.0 dB
Polarization Dependence Loss (PDL)[2]	< 0.20 dB	< 0.20 dB	< 0.15 dB
Polarization Mode Dispersion (PMD)[2]	< 0.5 ps		
Activation Loss[2]	< 0.05 dB Per Channel		
Return Loss[2]	> 50 dB		
Optical Power Handling[3]	500 mW		
Electrical Performances			
Response Time (Rise/Fall Time)[4]	< 10 μs		
V_π (@room temperature) [5]	V_π < 40 V for 1064 nm, V_π < 60 V for 1550 nm		
Modulation Rate (Sinusoid) [6]	DC ~ 130 kHz		
Physical/Environmental Performances			
Operating Temperature	0 ~ 80°C		
Storage Temperature	-40 ~ 80°C		
Dimension (L x W x H)	70 mm x 41 mm x 9.5 mm		

Notes
1 Other wavelengths are available and tested with narrow-line width laser diode (DFB)
2 Measured at 1550nm
3 Higher power version is available.
4 Limited by the driver design.
5 Value depends on modulation frequency.
6 OZ Optics can provide a driver.

Description: Electro-Optical Polarization Controller

Part Number: **EOPC-*A*-11-*W*-*a/b*-*I*-*O*-*XY*-*JD*-*L*-*T***

A = 200 for 2 electro-optical elements
300 for 3 electro-optical elements
400 for 4 electro-optical elements

W = Wavelength (specify in nanometers)
Example: 1300/1550 for standard telecom wavelength range. 1060 for 1064 band.

a/b = Fiber core/cladding sizes, in microns 9/125 for 9/125 μm singlemode fiber. 6/125 μm for 1064 μm operating.
See *Standard Tables* for other standard fiber sizes.

I = Input Fiber:
S = Singlemode
P = Polarization maintaining

O = Output Fiber:
S = Singlemode
P = Polarization maintaining

See the *Standard Tables* data sheet for other standard fiber sizes and connectors.
https://www.ozoptics.com/ALLNEW_PDF/DTS0079.pdf

T = T for Built-in TEC
Blank for No Built-in TEC

L = Fiber Length in meters, on each side of the device. If they are different lengths, specify the input and output lengths separated by a comma. Example: To order 1 meter of the fiber at the input and 2 meters at the output, replace L with 1,2.

JD = Fiber jacket type:
1 = 900 micron OD hytrel jacket

XY = Connector code:
X = No Connector
3S = Super NTT-FC/PC
3U = Ultra NTT-FC/PC
3A = Angled NTT-FC/PC
8 = AT&T-ST
SC = SC
SCU = Ultra SC
SCA = Angled SC
LC = LC/PC
See *Standard Tables* for other connectors.

Questionnaire For Custom Parts:

1. Are you performing polarization scrambling or polarization controlling?
2. What is your operating wavelength?
3. What type and size of fiber do you want?
4. What type of connectors do you need?
5. How long should the fibers be?
6. What is the fiber jacket OD?
7. Do you need an external driver?