

# Fiber Optic Depolarizers

All-fiber depolarizers applicable to a wide range of sources

## FEATURES:

- Low DOP
- Low insertion loss
- Near zero back reflection
- All-fiber construction
- Wide wavelength operating range
- Passive operation
- Rugged packaging



## EXAMPLE APPLICATIONS:

- Optical source polarization randomization
- Raman amplifier pump laser
- EDFA pump laser
- ASE, SLD and ELED sources
- Polarization measurement systems
- Fiber optic gyroscopes
- Optical fiber sensor systems

## LYOT TYPE DEPOLARIZER

The **Phoenix Photonics** depolarizer is an all-fiber Lyot type device producing pseudo-random polarization output, with low degree of polarization (DOP), for any input state of polarization (SOP).

The depolarizer is a passive device utilizing the coherence properties of the source to randomize the SOP. For optimum performance the depolarizers are designed to match the source spectrum and the range of Phoenix depolarizers will meet the differing requirements of optical sources from broadband ASE's to high power amplifier pump lasers.

## DEPOLARIZER OPTIONS

- The standard depolarizer can be spliced or connected into a SM fiber system converting any arbitrary SOP to a depolarized output.
- Designed specifically for **Raman** amplifier pump applications, this compact version of the depolarizer has a PM fiber input for direct connection to the laser PM fiber pigtail.
- Also, available with integrated polarizer to 'clean up' the input polarization, this device provides excellent PDG performance for Raman amplifiers.



**SPECIFICATIONS:**

Wavelength range <sup>1</sup>	980nm	1280nm – 1625nm
Operational bands <sup>1</sup>	980nm	1300nm, 14XX, S,C,L
Residual extinction ratio <sup>2</sup>	<0.2 dB	<0.2dB
Degree of Polarization <sup>3</sup>	<5%	<5%
Insertion loss <sup>4</sup>	<1dB	<1dB
Return loss <sup>5</sup>	>70dB	
Source linewidth <sup>6</sup>	>0.1nm	
Operating temperature range <sup>7</sup>	-5 <sup>0</sup> C to 70 <sup>0</sup> C	
Transportation/storage <sup>8</sup>	-40 <sup>0</sup> C to 85 <sup>0</sup> C	
Input Fiber type	Corning Puremode HI 1060	SMF28(SM) PANDA (PM)
Output Fiber type	Corning Puremode HI 1060	SMF28 (SM) PANDA (PM)
Pigtails	1m fiber standard, 900µm loose tube optional	

**DEPOLARIZER OPTIONS:**

State of Polarization input		Arbitrary	Linear	Linear
Integrated Polarizer		No	No	Yes
Wavelength ranges (nm)		980, 1280-1625	1280-1625	1280-1625
Insertion Loss (dB)	BB	<1	<1	<1.5
	LS	<2	<2	<2.5
	RM	<1	<1	<1.5
Input Fiber		SM	PM	PM
Output Fiber		SM	SM	SM
Dimensions (mm) LxWxH	BB	150x95x10	150x95x10	150x95x10
	LS	160x103x35.5	160x103x35.5	160x103x35.5
	RM	N/A	150x95x10	150x95x10

All dimensions are approximate and may vary slightly.

**Notes to Specifications:**

- All specifications are worst case for the wavelength range selected; actual products commonly exhibit better specification.
- All depolarizers are individually tested.

1. The devices will provide depolarization over a wide wavelength range for which the fiber is single mode. Performance characteristics are wavelength dependent and the devices will meet specification as follows:

- Type 15 – 1530nm to 1625nm
- Type 14 – 1420 nm to 1530 nm
- Type 13 – 1280nm to 1320nm
- Type 09 – 980nm

2. The residual extinction ratio (RER) is measured for each device during manufacture to ensure specification.

3. The DOP varies with wavelength increasing at longer wavelengths. Across the specified band the DOP is within 5%.

4. Insertion loss is typically 0.7dB without integrated polarizer and 1dB with the polarizer. The insertion loss excludes connector losses.

5. The all-fiber technology gives an excellent return loss figure of >70dB.

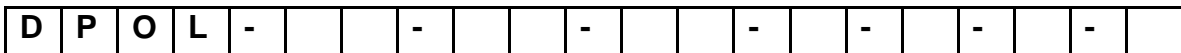
6. The DOP for a Lyot depolarizer is dependent upon the source spectrum, the model options are shown below, please confirm selection with our sales representative.

- BB – Broadband sources such as ASE, SLD, ELED
- LS – Laser sources with linewidths from 0.1nm
- RM – Raman pump source laser

7. The operating temperature range is specified for typical telecommunications operation. Please discuss with the sales representative if operation outside the specified range is required.

8. The devices are very robust for storage and transportation.

**PRODUCT ORDERING INFORMATION:**



- |   |   |  |  |  |   |  |
|---|---|--|--|--|---|--|
| <b>Model:</b><br>BB - Broadband<br>LS - Laser<br>RM - Raman | <b>Wavelength:</b><br>15 – 1530nm<br>14 – 1480 nm<br>13 – 1300 nm<br>09 – 980nm | <b>Input/output fiber:</b><br>SS – SM/SM<br>PS – PM/SM | <b>Polarizer:</b><br>0 – none<br>1 – integrated at input | <b>Cable type:</b><br>0 – none<br>1 – 900µm loose tube | <b>Protection:</b><br>B – Boxed<br>N – Unboxed<br>C – Single coil | <b>Connectors:</b><br>0 – none<br>1 – FC/SPC<br>2 – FC/APC<br>3 – SC/SPC<br>4 – SC/APC<br>* Others available |
|---|---|--|--|--|---|--|

**Phoenix Photonics Limited**

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