

Making Light Work Lighter

General Photonics

C o r p o r a t i o n

DEP – 001

Fiber Optic Depolarizer
PolaZero™

Operation Manual



June 20, 2003

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Specifications

Center operating wavelength	1550 nm standard, 1310 nm, 1420 nm, 1480 nm, and 1600 nm user selectable ¹
Operating wavelength range	± 50 nm
Coherence length of the light source	10 m standard, others specify ²
Output degree of polarization	< 5 %
Insertion loss	1.0 dB typical, 1.4 dB max. ³
Residual extinction ratio	<0.5 dB
Return loss	55 dB
Optical power handling	300 mW min.
Operating temperature	0-70°C
Storage temperature	-40~85°C
Input/output fiber type	Input: PM Panda, Output: Corning SMF-28
Fiber Input/Output Connectors	FC/PC, FC/APC, SC/PC
Package Dimensions	85 mm × 60 mm × 10 mm

Note:

1. Center operating wavelength specified by the user at the time of order. Please contact General Photonics for availability and lead time.
2. Coherence length can be from 1 meter to 3 kilometers based on user specification at the time of order. Package size may be larger for coherence length longer than 30 meters.
3. Insertion loss does not include connector loss.

Device Overview

DEP-001 is a passive optical depolarizer that randomizes the input linear polarization state. The device requires no external electric power supply during operation. After passing through DEP-001, a highly polarized quasi-monochromatic light beam will be effectively depolarized when the coherence length of the source beam is less than the specified depolarizer coherence length. DEP-001 is ideal for removing the effect of light source polarization in optical testing, measurement, sensing, and other applications that requires passive polarization state randomization.

DEP-001 provides the longest coherence length coverage in its class. Coherence length from 10 meters to 3 kilometers can be obtained easily with relatively low insertion loss and cost. It can be used readily for lasers from Fabry-Perot lasers to distributed feedback lasers, as well as highly coherent tunable lasers.

DEP-001 uses a rugged package design with a polarization maintaining (PM) input fiber pigtail and a single mode (SM) output fiber pigtail. The packaged device and external dimensions are shown in Figure 1 and Figure 2.



Figure 1 DEP-001 PolaZero™ depolarizer package picture.

Operation

DEP-001 is an easy to operate optical component. Only optical connections are required during initial setup. Please follow the safety precautions when make optical connections.

Warning:

- **Never look at the light source fiber connector against the light exit direction when light source is turned on. THE OUTPUT LIGHT FROM A HIGH POWER LASER IS HARMFUL TO HUMAN EYES. Please follow industry standard procedures when operating a high power laser source.**

Unpacking

Input/output fiber pigtails must be handled carefully. Never pull the fiber pigtails when remove DEP-001 from the transportation package box. Excess force on the fiber pigtail may degrade device performance or damage the device. Never let the free-drop of fiber connector occur at any time.

Inspect DEP-001 to check if any physical damage due to shipping and transportation. Contact carrier or General Photonics if any damages are detected.

Getting Started

Typical DEP-001 depolarizer is a unidirectional device. The optical path direction is marked on the package. The input pigtail is a polarization maintaining fiber that is typically inserted in a transparent loose tube. Before making optical connection, clean the fiber connectors using industry standard approaches.

For light sources with PM output fiber, the output connector can be directly connected to the input fiber of DEP-001.

If the polarized light source output fiber is a single mode fiber, an all-fiber polarization controller between light source and DEP-001 input fiber is recommended. Adjust the polarization controller to maximize the output optical power from the depolarizer. In addition, the single mode fiber section should be short and secured on a rigid surface to avoid random polarization perturbations and fluctuations.

DOP Verification and Measurement

The output degree of polarization (DOP) of DEP-001 is tested and verified at the factory for each device. Users can also perform their independent test using a standard polarization analyzer available from instrument manufacturers. General Photonics manufactures a low cost degree of polarization meter (DOP-101) for dedicated DOP monitoring purpose. For more information, please contact General Photonics.

Device Mounting

DEP-001 has 4 mounting holes for PCB or panel mounting. The location and hole size are illustrated in Figure 2.

Service

DEP-001 is not a user serviceable device. Unauthorized disassembling will void warranty for the device. If any problem occurs that affects the performance of DEP-001, please contact General Photonics or its distributor in your area.

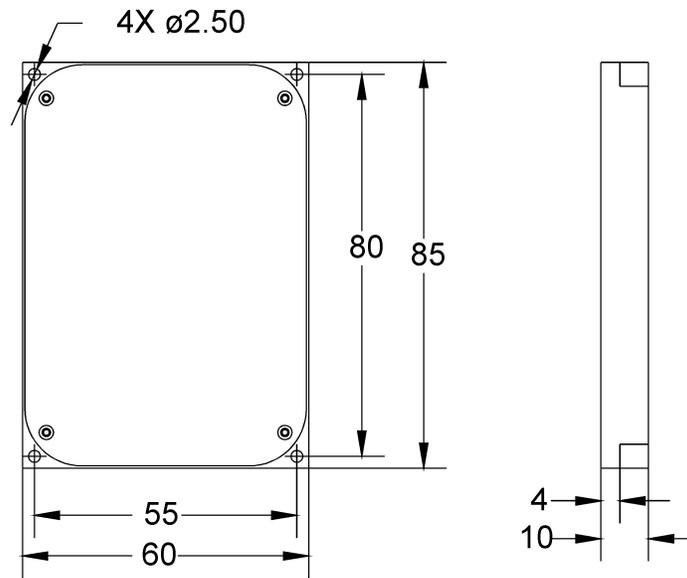


Figure 2 Mechanical dimensions and mounting hole location.
All dimensions are in millimeters.

Technical Support

General Photonics is committed to high quality standard and customer satisfaction for its products. If there is any question regarding the quality and the use of DEP-001, or future suggestions, please feel free to contact General Photonics Corporation at (909)-590-5473 (telephone) or (909)-902-5536 (fax), or by e-mail at info@generalphotonics.com. General Photonics will respond to all customer questions within 24 hours during regular business hours. User can also write to:

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