



OZ Optics

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MOTOR DRIVEN POLARIZATION DEPENDENT LOSS EMULATOR - OEM

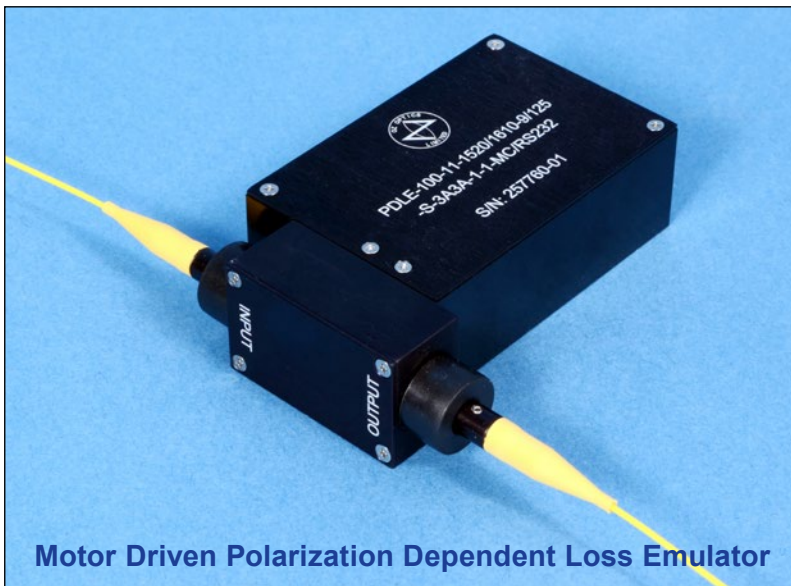
PRELIMINARY

Features:

- Electrically controlled Polarization Dependent Loss (PDL) emulation
- Low insertion loss
- Broad wavelength range
- Wide selection range of connectors
- Low cost
- Low PMD
- High PDL resolution
- Computer Interface Selection: RS232, I²C or SPI

Applications:

- PDL Compensation
- Reference PDL source
- Test Equipment PDL calibration
- Quality control and measurement



Motor Driven Polarization Dependent Loss Emulator

Product Description:

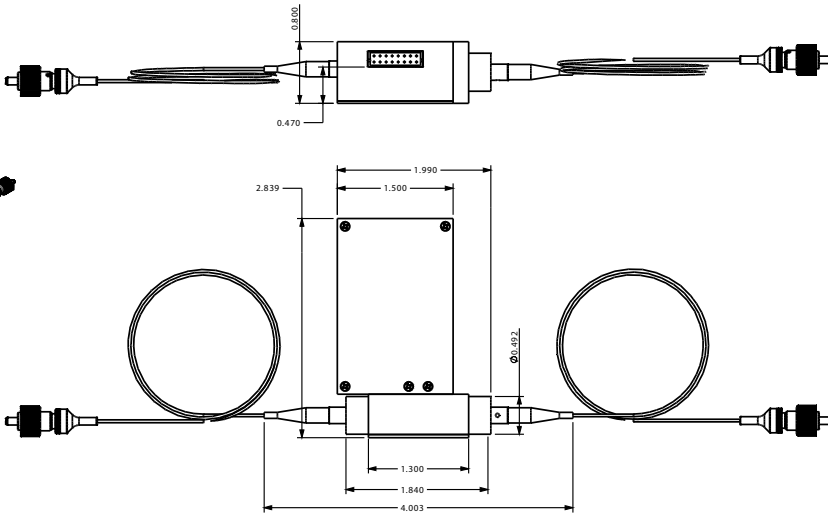
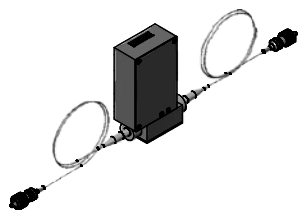
OZ Optics' motor driven polarization dependent loss emulator (PDLE) is an OEM module that comes with a built-in stepper motor, optical block and control firmware. The device allows the user to set, with high precision, a desired PDL artifact value within a 0.1 dB to 20 dB dynamic range, using the remote control interface commands. The motor driven PDLE features low insertion loss and low polarization mode dispersion (PMD) over a broad operating wavelength range. The standard model is optimized for C/L Band optical signals, covering 1520 nm to 1610 nm. By controlling and accurately manipulating the state of polarization (SOP) inside the device, one can generate variable PDL from 0.1 dB to 20 dB

(higher PDL values available on request), with fine resolution.

The PDLE is useful to emulate PDL effects due to passive/active optical devices in an optical link, such as attenuators, modulators, array waveguides, fiber Bragg gratings, switches, fused couplers, etc. The PDLE enables physical emulation of the PDL in an optical system to quantify available PDL budget margins. The PDLE coupled with other OZ Optics products such as a polarization dependent loss meter, a polarized stable source, or a polarization controller, can significantly assist in defining and quantifying polarization dependent losses in an optical system.

Figure 1. Motor Driven PDLE

All units are in inches.



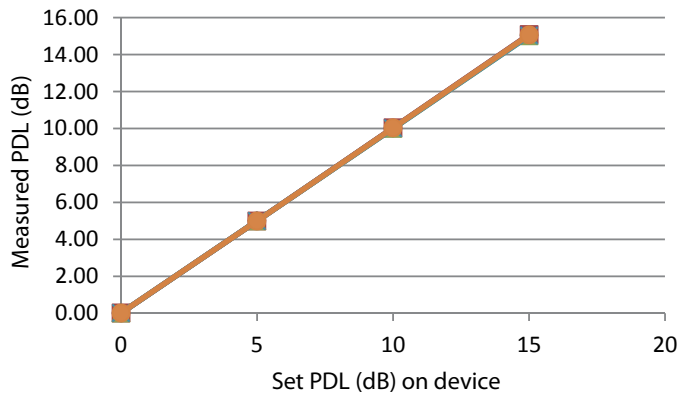
Standard Product Specifications¹:

Part Number	PDLE-100-11-1520/1610-9/125-S-3A3A-1-1-MC/RS232	
Wavelength Range ²	1520 nm to 1610 nm	
Fiber Type	9/125 μ m single mode fiber.	
PDL Dynamic Range	0.1 dB to 20 dB	
Insertion Loss (Residual)	< 1.00 dB	
Optical Return Loss	> 55 dB	
PMD	< 0.5 ps	
Operating Temperature	0 to 40 °C	
Storage Temperature	-10 to +60 °C with < 80% non-condensing relative humidity.	
Maximum Input Power	500 mW	
Computer Interface	RS232, I ² C or SPI	
Response Time	20 dB change in less than 1 second. 1 dB change in less than 0.1 second.	
Dimensions (L x W x H)	0.8" x 1.99" x 2.84" (20.4 mm x 50.6 mm x 72.2 mm), (not including fibers)	
Weight	0.2 lb. (100 g)	
Power Requirements	Voltage	5 to 12 volts
	Current	520 mA typical maximum @ 5 V, 182 mA typical maximum @ 12 V

¹ Reference condition: 23°C measured with 1 mw, 1550 nm fiber optic stable source after 30 minutes warm-up period.

² Other wavelengths such as 1310 nm or 1480 nm are also available upon request.

PDL Linearity response



Ordering Information For Standard Parts:

Bar Code	Part Name	Description
69433	PDLE-100-11-1520/1610-9/125-S-3A3A-1-1-MC/RS232	PDLE optimized for use over 1520 to 1610 nm, and with dynamic range from 0.1 dB to 20 dB. Consists of 1 m long 0.9 mm OD jacketed 9/125 μ m SMF-28e+ fibers. Unit calibrated at 1550 nm. Low PMD <0.5 ps (typically <0.1 ps. IL \leq 1.2 dB (excluding connector losses). Serial interface options: RS232.

Ordering Information For Custom Parts:

OZ Optics welcomes the opportunity to provide custom designed products to meet your application needs. As with most manufacturers, customized products do take additional effort, so please expect some differences in the pricing compared to our standard parts list. In particular, we will need additional time to prepare a comprehensive quotation, and lead times will be longer than normal. In most cases non-recurring engineering (NRE) charges, lot charges, and a 1 piece minimum order will be necessary. These points will be carefully explained in your quotation, so your decision will be as well informed as possible. We strongly recommend buying our standard products.

Questionnaire For Custom Parts:

1. What is the PDL level you require?
2. What is your operating wavelength range?
3. What type of connectors are you using?
4. How long should the fibers be?
5. What is the fiber core/cladding diameters and fiber jacket OD?

Description: Motor Driven Polarization Dependent Loss Emulator

Part Number: **PDLE-100-11-W-a/b-S-XY-JD-L-MC/R**

W = Wavelength in nm:
1310, 1480, 1550, 1625

a/b = Fiber core/cladding size, in microns.
9/125 for 1310, 1480, 1550 or 1625 nm wavelengths.

X,Y = Input and Output Connector Codes
 3S = Super NTT-FC/PC
 3U = Ultra NTT-FC/PC
 3A = Angled NTT- FC/PC
 SC = SC
 SCA = Angled SC
 8 = AT&T-ST
 MU = MU type connector
 LC = LC type connector
 X = Unterminated

R = Remote interface:
 RS232 = RS232 interface
 I²C = I²C interface
 SPI = SPI interface

L = Fiber length in meters

JD = Fiber jacket type:
 1 = 900 micron OD hytrel jacket
 3 = 3 mm OD Kevlar reinforced PVC cable

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

Ordering Examples For Custom Parts:

A test equipment manufacturer needs a motorized PDL Emulator for 1480 nm. As they intend to splice the device into their system, they want 2 meter long leads, no connectors, and 0.9 mm cable. The part number is as follows: PDLE-100-11-1480-9/125-S-XX-1-2-MC/RS232.

Frequently Asked Questions (FAQs):

Q: Is the PDL calibrated?

A: Yes it is calibrated. Through the device remote commands the PDLE can set the required PDL value.

Q: Does the insertion loss listed in the specifications include the PDL?

A: No, it does not.

Electrical Connections:

The PDLE has a Hirose 16-pin connector, part number DF11-16DP-2DS(24), with the following pin designations:

Pin	Function	Comments
1	GND	Common Ground
2	GND	Common Ground
3	+V	Supply Voltage (5 to 12V)
4	N/A	Reserved for OZ Optics factory use. DO NOT USE.
5	N/A	Reserved for OZ Optics factory use. DO NOT USE.
6	+V	Supply Voltage (5 to 12V)
7	Rx	RS-232 receiver input
8	Tx	RS-232 transmitter output

Pin	Function	Comments
9	SCK/SCL	SPI/I ² C serial clock
10	SS	SPI enable slave select (active low TTL input)
11	SDO	SPI serial data out
12	SDI/SDA	SPI data input/I ² C data
13	N/A	Reserved for OZ Optics factory use. DO NOT USE.
14	N/A	Reserved for OZ Optics factory use. DO NOT USE.
15	N/A	Reserved for OZ Optics factory use. DO NOT USE.
16	N/A	Reserved for OZ Optics factory use. DO NOT USE.

N/A = Not Applicable.

(1) (3) (5) (7) (9) (11) (13) (15)
(2) (4) (6) (8) (10) (12) (14) (16)
Hirose 16-pin connector

When you first connect the wire harness to the 16-pin port, make sure that the power is off. Before turning the power on, make sure that your connections have the correct voltage levels and polarity (given above). If you have ordered an RS-232 interface, the harness comes terminated with a DB9 connector that plugs directly into your computer's serial port. For special applications, the harness is left without a connector and must be terminated by the user for the communications type of their choice.