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POLARIZATION DEPENDENT LOSS METER

Features:

- Fast PDL measurement (< 1sec)
- Insensitive to external power drift
- Very low variation in internal loss (<0.003dB)
- Wide wavelength range operability
- Swept wavelength capability
- High resolution
- Statistical measurement analysis
- Replaceable detector receptacles
- Built in graphical interface with color touch screen display
- Optional high power versions
- Low cost
- Large PDL dynamic range

Polarization Dependent Loss Meter With Source And Device Under Test

Applications:

- Optical passive component qualification and testing
- Characterization of PDL dependency versus wavelength
- Fiber Bragg Grating qualification
- Polarization Dependent Gain (PDG) measurement of EDFA
- Quality Control

Product Description:

OZ Optics produces a Polarization Dependent Loss (PDL) meter that integrates a sophisticated optoelectronic design with a user friendly interface. The meter is designed to be insensitive to external optical power drift and generates very low insertion loss fluctuations during a measurement cycle. OZ Optics' PDL meter can be used to measure any pigtailed optical passive components acurately and repeatably, including fiber array wave guides, variable optical attenuators, isolators, couplers, switches and other optical devices.

The meter offers the capability of quickly characterizing PDL versus wavelength over a specified wavelength range. This is useful for testing a variety of optical components such as fiber Bragg Gratings. The meter is capable of acquiring and statistically analyzing multiple PDL measurements during a user-adjustable period of time.
The meter includes a built-in computer using the Windows™ CE operating system and a color touch screen. The built-in graphical display makes data analysis easy. The unit can be remotely operated via the serial interface port (RS232, RS485) or via a parallel printer port. An optional GPIB to RS232 converter is also available.

OZ Optics provides fixed and variable polarization dependent loss emulators. These emulators produce a precise level of polarization dependent loss, from 0.05 to 1dB. These devices can be used as references for calibration if required. OZ Optics also offers polarized fiber optic sources, singlemode patchcords and polarization maintaining patchcords to complete your test setup. See the related data sheets for details.

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Ordering Information For Standard Parts:

Bar Code	Part Number	Description
13377	PDL-100-333-1250/1650-9/125-S	Polarization Dependent Loss meter with Ultra FC/PC receptacles, adapted for wavelengths from 1250nm to 1650nm
2836	FOSS-01-3S-9/125-1550-S-1	Fiber Optic Laser Diode Source with 1550 nm wavelength, 1 mW output, for 9/125 core/cladding singlemode fiber using Super FC/PC receptacle.
2835	FOSS-01-3S-9/125-1310-S-1	Fiber Optic Laser Diode Source with 1310 nm wavelength, 1 mW output, for 9/125 core/cladding singlemode fiber using super FC/PC receptacle.
8136	SMJ-3U3U-1300/1550-9/125-3-1	Ultra FC/PC to Ultra FC/PC, 9/125um singlemode jumper 1300/1550nm fiber, 3mm OD PVC jacketed, 1 meter long
13439	PDLE-11-1550-9/125-S-3U3U-3-1-0.5	1550nm, 0.05 to 0.5dB manually variable Polarization Dependent Loss Emulator, with 1m long singlemode fibers, with 3mm OD jacket, terminated with Ultra FC/PC connectors.
4572	GPIB-RS232	RS232 to GPIB Converter
4571	GPIB-CABLE-2	GPIB Cable, 2m Long
2737	POWER CORD - EUROPE	Power cord for Europe
2736	POWER CORD - UK	Power cord for UK plug

Standard Product Specifications[1]:

Part number	PDL-100-333-1250/1650-9/125-S
Measurement Method	Random method as described in FOTP-157 (TIA/EIA-455-157)
Wavelength range	1250 nm to 1650 nm
Fiber Type	Corning SMF-28 Singlemode fiber
PDL Dynamic Range	0.015 to 30 dB
Accuracy[2]	±0.005dB + 5% of PDL
Repeatability	±0.003dB + 2% of PDL
Insertion Loss	< 4 dB
Optical Return Loss	< -50 dB
Max input power[3]	1 mW
Scan time	< 1 s
Operating temperature	10 to 40 °C
Storage temperature	-10 to 60 °C
Dimensions (H-W-D)	18 cm x 27 cm x 30 cm
External Controls	RS-232, RS-485 DB-9 type connector, or Parallel Printer Port
Weight	5 kg
Input voltage[4]	100 to 240 V AC / 50 to 60 Hz
Display	Color touch screen

Notes:
1 For 1550nm and 1310nm +/-40nm and at reference condition: 23°C ambient temperature after 30 minutes warm-up period
2 Measured at 1550nm and 1310nm with 0.5 mW pigtailed Fabry-Perot source up to 20dB. Lower accuracy will be obtained above 20dB
3 Higher input power available upon request.
4 Standard product comes with a North American power cord. Other power cords are available as accessories

Ordering Example For Standard Parts:

A North American Optical Passive component R&D facility wants to measure the PDL dependency versus wavelength of Fiber Bragg Gratings across the C-band. We assume they are using their own tunable optical source. They need to order these following parts:

Bar Code	Part Number	Description
13377	PDL-100-333-1250/1650-9/125-S	Polarization Dependent Loss Meter with Ultra FC/PC receptacles for wavelengths from 1250nm to 1650nm
8136	SMJ-3U3U-1300/1550-9/125-3-1	Ultra FC/PC to Ultra FC/PC, 9/125um singlemode jumper 1300/1550nm fiber, 3mm OD PVC jacketed, 1 meter long

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 output power of your source?
2. What is the PDL range suitable for your application?
3. Do you plan to test PDL dependency versus wavelength?
4. What type of connector do you need?
5. What is the dynamic range you require?

Polarization Dependent Loss Meter: **PDL-100-33*X*-1250/1650-9/125-S**

***X*[1]** = Receptacle Code for detector:
- 3= Standard, Super, Ultra NTT-FC/PC Receptacle
- 3A= Angled NTT- FC/PC
- SC=SC
- SCA=Angled SC
- 8= AT&T-ST
- 2.5U= Universal Receptacle
- MU= MU type connector
- LC= LC type connector

Note:[1]Detector receptacle is replaceable.

Ordering Examples For Custom Parts:

A customer in France needs to measure the PDL of their fixed attenuators, which are terminated with SC connectors. They already have a source, and FC/PC patchcord, and an SC to SC sleeve through adaptor. They need to order the following parts:

Bar Code	Part Number	Description
none	PDL-100-33SC-1250/1650-9/125-S	Polarization Dependent Loss Meter with SC detector receptacle for 1250nm to 1650nm wavelengths
2737	Power Cord - Europe	Power cord for European 4mm round pin plug
8472	SMJ-3SSC-1300/1550-9/125-3-1	Patchcord super FC/PC to super SC, 9/125um Singlemode1300/1550 fiber, 3mm OD PVC jacket, 1mm long.

Frequently Asked Questions (FAQs):

Q: How does your PDL meter measure polarization dependent losses?
A: The PDL is measured by generating random states of polarization at the input of the device under test (DUT) over the scan time. A detector circuit measures the maximum change in the loss over the scan time. This method is described in fiber optic test procedure FOTP-157 (TIA/EIA-455-157)

Q: What kind of light source is required for use with the PDL meter?
A: The PDL meter must be connected to an external light source. This gives the user the flexibility to select what ever wavelength he wants. The source should have a degree of polarization (DOP) of more than 70%. A source with a lower DOP can be used, but the number of samples taken should be increased to compensate for the lower DOP. Most laser diode sources have a DOP of more than 70%. LED sources are not recommended for use with the PDL meter because of their low power and low DOP. For best results, the optical power of the source should be close to 1mW, although lower power can provide acceptable results. The source input to the PDL meter can accept a patchcord with a standard, Super, or Ultra NTT-FC/PC connector. OZ Optics is able to supply many types of sources and patchcords to meet your requirements.

Q: Can I print test results for my devices?
A: Yes, test results can be saved in a text format and then transferred to any personal computer through the communication interface.

Q: Can your meter also measure Polarization Mode Dispersion (PMD)?
A: No, the meter is designed to measure PDL values only**.**

Application Notes:

OZ-Optics' PDL meter is designed to provide an easy to use set-up to characterize PDL versus wavelength of any optical components. Application software controlling both the tunable source and the PDL meter can be written to perform swept wavelength measurements. This method consists of a successive sequence of wavelength steps from the tunable source followed by performing a scan for PDL at each specific wavelength.

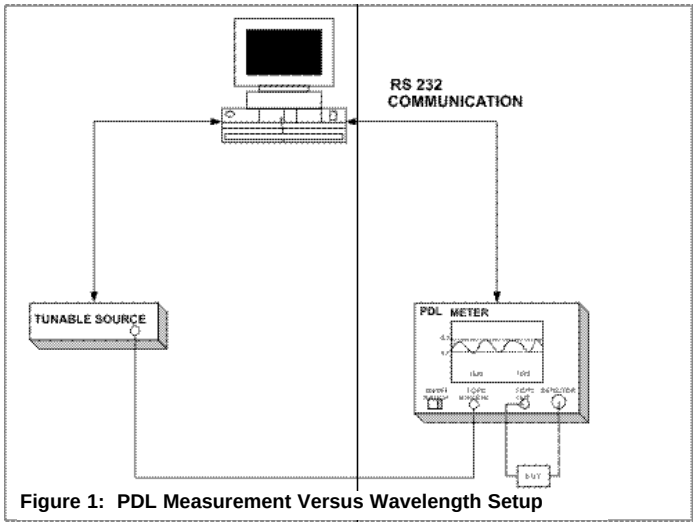

Figure 1: PDL Measurement Versus Wavelength Setup