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THORLABS

PMD5000FIN-2 - Nov. 03, 2016

Item PMD5000FIN-2 was discontinued on Nov. 03, 2016. For informational purposes, this is a copy of the website content at that time and is valid only for the stated product.

MODULAR PMD/PDL MEASUREMENT SYSTEMS

▶ PMD, 2nd Order PMD, PDL, DGD, and IL
▶ Split Device Option for Buried Fibers
▶ Modular and Highly Configurable

PMD5000FIN-1
Powerful User Interfaces and PC Included

Network Analysis on Busy Fibers
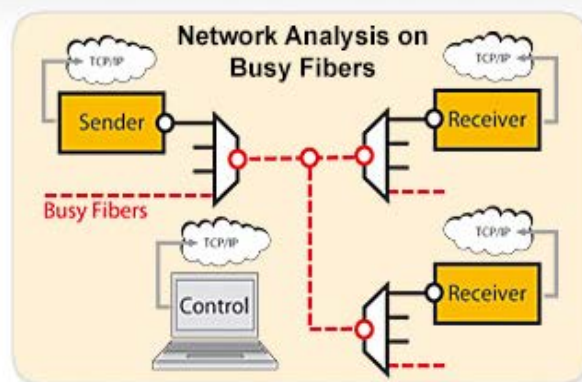
[Hide Overview](#)

OVERVIEW

Two Basic Systems to Choose From

- Fast In-Line PMD/PDL Analysis System for Fibers: PMD5000FIN
- High Dynamic Range PMD/PDL Analysis System for Narrow Bandwidth Components: PMD5000HDR

Features of the Modular PMD/PDL Analysis System PMD5000

- Measurements Based on Jones-Matrix Eigenanalysis (JME)
- 2 Polarimeter Versions: Rotating Waveplate or Fiber Based
- Bandwidth from 1520 to 1630 nm (others on request)
- Modular and Flexible
- Excellent Accuracy
- For External Tunable Laser Sources

Applications for the PMD5000

- PMD Measurements According ITU-T G.650
- Reference Method in the Range 1520 - 1630 nm
- Wavelength Dependent PDL, SOP, DOP Analysis
- PMD/PDL Analysis of Narrow Bandwidth Components
- Installed Fiber JME Analysis
- Field Applications

Introduction

The PMD5000 is a powerful and diverse modular system for measuring first and second order Polarization Mode Dispersion (PMD), Polarization-Dependent Loss (PDL), Differential Group Delay (DGD), and Insertion Loss (IL). This system uses the Jones Matrix Eigenanalysis based PMD/PDL measurements and is built onto the TXP platform. It is a powerful and flexible solution for all kinds of PMD/PDL related measurement tasks in laboratories as well as field applications including the analysis of installed fibers.

Modular Design
Depending on the application the PMD5000 System comprises different modules that can be used independently as well. The PMD5000 utilizes external tunable lasers as light source. We can integrate most tunable lasers with a PC interface. Drivers for the following models are readily available: Agilent Mainframe 8163A/B, 8164A/B, 8166A/B, and Module 81940A as well as Ando AQ4320A/B/D. Please contact our Tech Support Team for further information about your laser.

Analysis of Narrow Bandwidth Components
The software package version 2 for the Thorlabs PMD/PDL Analysis System PMD5000 series enhances its application especially for the analysis of narrow bandwidth components. The PMD5000 system, which is based on Jones Matrix Eigenanalysis, now allows the analyzing parameters to be changed after the device under test (DUT) has been measured. A single data set of the DUT can be analyzed for different wavelength ranges or at different zoom levels. This makes repetitive measurements with optimized parameters obsolete and contributes to speed and flexibility of the analysis. For more information please see the "User Interface" tab.

Besides a suitable external tunable laser source, the PMD5000 consists of the Deterministic Polarization Controller, DPC5500, and a polarimeter module - either the fast in-line polarimeter IPM5300 or the High Dynamic Range Terminating Polarimeter, PAX5720IR3 - plus a specific software package providing powerful PMD/PDL analysis routines. A test version of this is integrated into the TXP application software which can be found at the *TXP Software* tab on the TXP platform page. Please see the *Components* tab for the modules of the two standard PMD5000 Systems.

For further information, please contact our Tech Support Team.

[Hide Components](#)

C O M P O N E N T S

Components of the PMD5000 Standard Systems

(For External Tunable Laser Sources)

Fast Inline Measurements: PMD5000FIN-2

- TXP5016: 16 Slot Mainframe
- DPC5500: Deterministic Polarization Controller
- IPM5300: High Speed In-Line Polarimeter

High Dynamic Range Measurements: PMD5000HDR-2

- TXP5016: 16 Slot Mainframe
- DPC5500: Deterministic Polarization Controller
- PAX5720IR3: High Dynamic Range Terminating Polarimeter

All systems come with a preconfigured laptop for plug and play.

[Hide Specs](#)

S P E C S

Items #	PMD5000FIN-2	PMD5000HDR-2
Optical Parameters		
Wavelength Range	1520 - 1630 nm (Others on Request)	
Dynamic Range	45 dB	60 dB
Measured Values	DGD, PDL, Mean and RMS Values of PMD, Plus 2nd Order PMD, PMD Coefficient	
Polarimeter Technology	Fiber based	Rotating Waveplate
Measurement Rate	Depends on TLS	
DGD Measurement Range	0.001 to 400 ps	
DGD Measurement Reproducibility	0.01 ps	

PDL Measurement Range	30 dB	50 dB
PDL Measurement Reproducibility	< 0.02 dB	
General Technical Data		
Operating Temperature Range	5 to 40 °C	
Storage Temperature Range	-40 to 70°C	
Optical Input / Output Connector	FC / APC	FC / APC (Input of Polarimeter FC / PC)
Warm up time for Rated Accuracy	< 15 min	
Mains Voltage	100 V / 240 V ± 10%	
Mains Frequency	50 Hz / 60 Hz ± 5%	
Maximum Power Consumption	400 VA	
Dimensions (W x H x D)	449 mm x 133 mm x 435 mm	
Chassis	19", 3U	
Weight	8.5 kg	

All data are valid at 23 ±5 °C and 45 ± 15% relative humidity
For further information about the TXP platform, please see the TXP platform page.

Hide User Interface

U S E R   I N T E R F A C E

PMD5000 Series User Interface

The **PMD5000 System** offers a wide range of measurement data. The insertion loss (IL) and the polarization dependent loss (PDL) are displayed in a single graph. The differential group delay (DGD) versus wavelength is shown in another graph with an additional histogram. The phase difference between two Jones matrices is given in a third diagram. The second order PMD and therefore the second order DGD versus wavelength can also be measured and is displayed separately with a histogram. Another measurement is the principle state of polarization shown in a diagram in the form of Stokes parameters. All data are also available as numerical values.

The following figure shows the GUI of the measurement mode with the DGD graph.
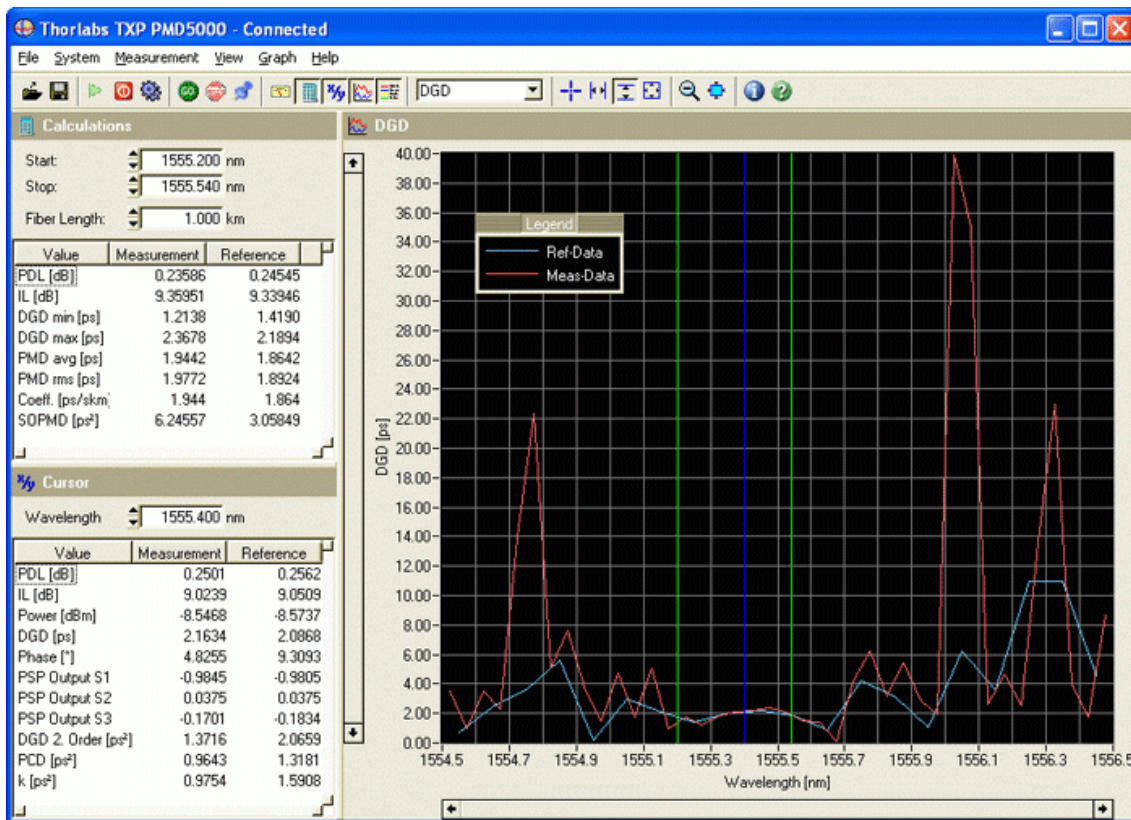
The green vertical lines show the wavelength range for which the analyzed parameters are calculated (upper left "Calculations" pane). The blue vertical line shows a specific single wavelength (cursor) for which the parameters are calculated (lower left "Cursor" pane).

Both the wavelength range and the cursor wavelength can be set and changed after the actual measurement has been performed. This allows quick fine-tuning of the wavelength range of interest for the analysis without running a measurement again.

Hide Pin Connections

PIN CONNECTIONS

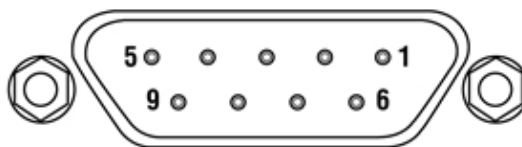### Auxiliary Connection for DPC5500 & IPM5300

D-Type Female
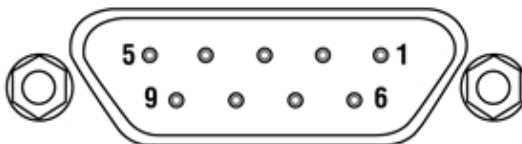
Pin	Name	I/O	Value	Function
1	Trigger	I	3.3/5 V	External Trigger-signal (0V=L, 3.3 ... 5 V=H) (for array mode)
2	AGND			Analog Ground
3	DOP	O	-2.5 ... +2.5 V	Degree of Polarization (0 ... 125%) (-2.5 V= 0%, 0 V= 62.5%, +1.5 V= 100%)
4	S_2	O	-2.5 ... +2.5 V	Normalized Stokes Vector S_2 (-1 ... +1)
5	Power	O	-2.5 ... +2.5 V	Optical Power log. (-30 ... +20 dBm) (0V = -5 dBm)
6	DGND			Digital ground for Trigger

7	Analog In	I	0 ... +2.5 V	Analog Control signal (not used here)
8	S_3	O	-2.5 ... +2.5 V	Normalized Stokes Vector S_3 (-1 ... +1)
9	S_1	O	-2.5 ... +2.5 V	Normalized Stokes Vector S_1 (-1 ... +1)

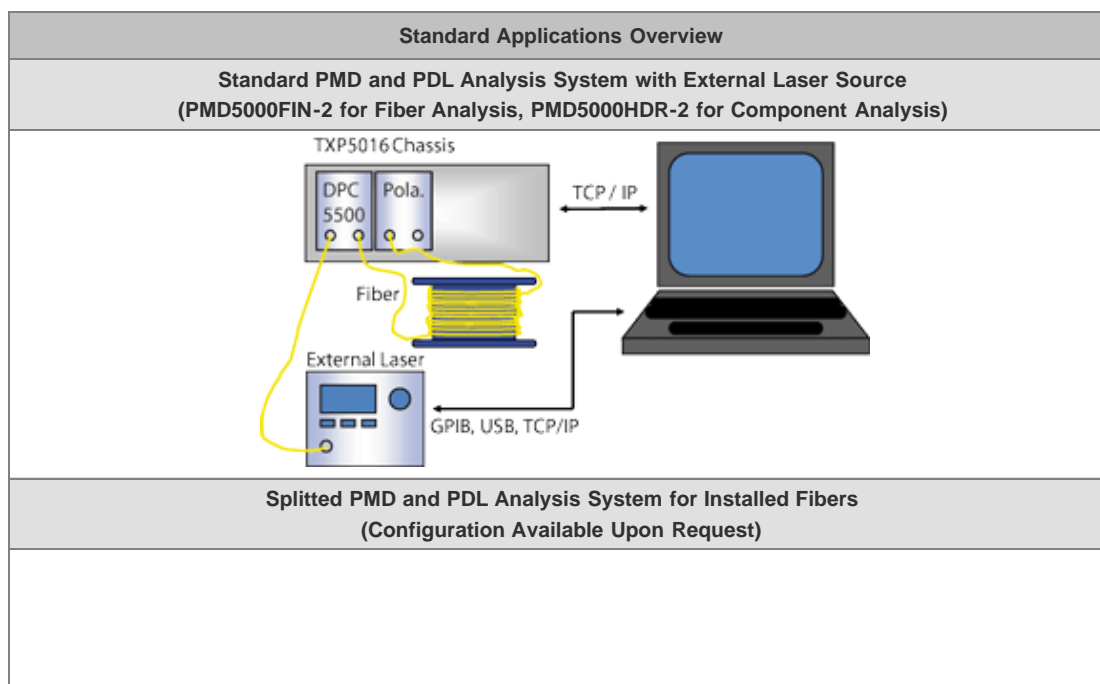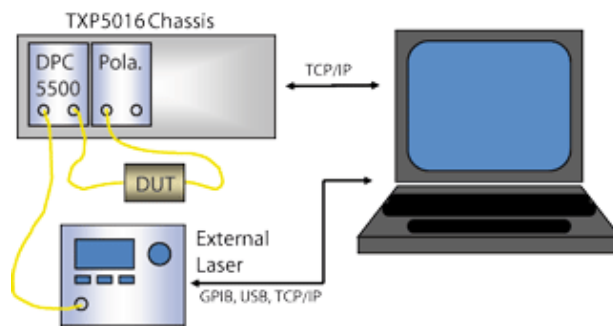**Analog Output and Trigger Input for PAX5720IR3**

D-Type Female

| Pin	Name	I/O	Value	Function
1	Trigger	I	3.3/5 V	External Trigger-signal (0V=L, 3.3 ... 5 V=H) (for array mode)
2	AGND			Analog Ground
3	Power	O	-2.5 ... +2.5 V	Optical Power log. (-70 dBm ... +30 dBm)
4	S_3	O	-2.5 ... +2.5 V	Normalized Stokes Vector S_3 (-1 ... +1)
5	S_1	O	-2.5 ... +2.5 V	Normalized Stokes Vector S_1 (-1 ... +1)
6	DGND		-2.5 ... +2.5 V	Digital ground for Trigger
7	Analog In	I	-2.5 ... +2.5 V	Analog Control signal (not used here)
8	DOP	O	-2.5 ... +2.5 V	Degree of Polarization (0 ... 110%)
9	S_2	O	-2.5 ... +2.5 V	Normalized Stokes Vector S_2 (-1 ... +1)

Hide Solutions

SOLUTIONS

Our Tech Support Department is available to assist you in customizing the configuration for your specific application. Please choose your nearest contact partner.

| Standard Applications Overview |
|---|
| **Standard PMD and PDL Analysis System with External Laser Source**
(PMD5000FIN-2 for Fiber Analysis, PMD5000HDR-2 for Component Analysis) |
| |
| **Splitted PMD and PDL Analysis System for Installed Fibers**
(Configuration Available Upon Request) |
| |

PMD and PDL Analysis System for Optical Networks
(Single Transmitter and Several Receivers)
(Configuration Available Upon Request)
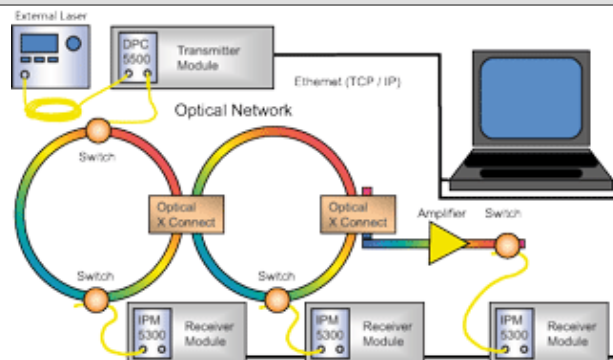
PMD and PDL Analysis System for a Live Fiber with Traffic
(Configuration Available Upon Request)
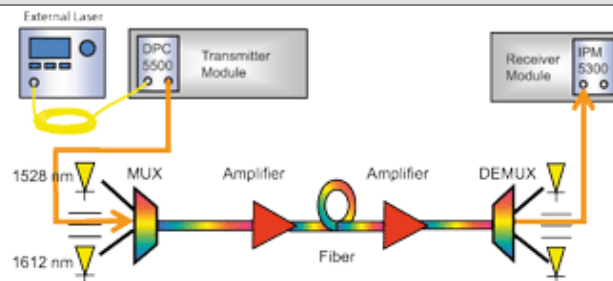
[Hide Shipping List](#)

SHIPPING LIST

Part	PMD5000FIN-2	PMD5000HDR-2
TXP5016 16 Slot Mainframe (TXP5016)	x	x
DPC5500 Deterministic Polarization Controller (DPC5500)	x	x
IPM5300 High Speed In-Line Polarimeter (IPM5300)	x	
PAX5720IR3 Terminating Polarimeter (PAX5720IR3)		x
Preconfigured Laptop with Software Installed	x	x
FC/APC Patchcord 30cm		
Ethernet Cable 1.5m	x	x
Software CD-ROM	x	x
LabVIEW™ and LabWINDOWS™/CVI Driver Set	x	x
Operating Manual	x	x

S O F T W A R E

TXP Software
Version 3.1.5

Standard full TXP software packages for the PMD5000:
Applications, Drivers, and Firmware.

Software ⬇

Part Number	Description	Price	Availability
PMD5000FIN-2	PMD/PDL Analyzer for external Tunable Laser and IPM5300 Polarimeter	$34,260.00	Lead Time
PMD5000HDR-2	PMD/PDL Analyzer for external Tunable Laser and PAX5720IR3 Polarimeter	$30,660.00	Lead Time