High Speed Variable Optical Delay - Piezo Driven

(up to 40 µm delay range, up to 100kHz, 1 µm acurancy, 500-2000nm SM, PM, MM, Bidirectional)

DATASHEET

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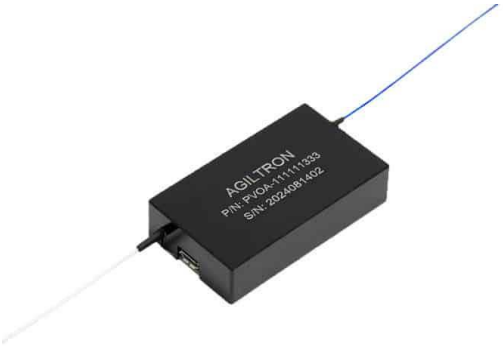

The PZTD Series High-Speed Variable Optical Time Delay offers exceptional performance with high speed, low loss, and precise operation. Compatible with all wavelengths and fiber types, including SM, MM, and PM, it employs a piezo motor to adjust the separation between a pair of mating fibers, enabling time delays of up to 40 µm. An integrated optical position sensor ensures approximately 1 µm delay accuracy and repeatability. The device is conveniently controlled via a computer through a shared Micro-B RS232 or USB interface, with intuitive graphical control software provided for seamless operation.

Features

- Low Cost
- Low Loss
- Fast
- Wide Range
- High Resolution
- High Reliability
- Easy to Use

Applications

- PMD Compensation
- OCT
- Interferometer
- Spectroscopy
- Lab use

Specifications

Parameter	Min	Typical	Max	Unit
Operation Central Wavelength	500	1550	2000	nm
Wavelength Range		±50		nm
Insertion Loss [1] [2]		0.3	0.8	dB
Return Loss [2]	55			dB
Loss Change		0.3	0.5	dB
PDL (SM Fiber)			0.2	dB
Scan Speed [3]		10	100	kHz
Position Repeatability/Accuracy	0.5	0.7	1	µm
Polarization Extinction Ratio (PM Fiber)	18	22	40	dB
Delay Resolution	0.1	0.4	0.5	µm
Optical Power Handling		0.5 [4]	5	W
Durability (Life cycle)	10^7			
Operating Temperature	-40		70	°C
Storage Temperature	-40		85	°C
Fiber Type	SM, PM, MM			

Notes:

[1]. Excludes connectors, Measured at 1550 nm

[2]. Tested with SM and PM fiber version only. For MM version, IL highly depends on CPR of light source and delay range, minimum RL 35dB.

[3]. Speed Variable with GUI setting

Equation to convert delay time to free space length:

$$T = L/C = L\ (m)/(2.9996x10^8 m/s)$$

Note: The specifications provided are for general applications with a cost-effective approach. If you need to narrow or expand the tolerance, coverage, limit, or qualifications, please [click this link]:

Rev 12/16/24

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Electrical Driving Requirement

USB and RS232 share a Micro-B interfaces and Windows™ GUI software. A wall pluggable 12 V DC power supply is provided.

Mechanical Dimensions (Unit: mm)

Ordering Information

	0 2	☐	☐	☐	☐	☐	☐
Prefix	**Type**	**Wavelength**	**Max Delay**	**Optical Power**	**Fiber Type***	**Fiber Cover**	**Connector**
PZTD-	Mini = 02	488 = 4 532 = 5 650 = 6 780 = 7 850 = 8 980 = 9 1060 = 1 1310 = 3 1550 = C 2000 = 2 Special = 0	7 µm = 1 20 µm = 2 40 µm = 4 Special = 0	0.5W = 1 5W = 2 10W = 3	SMF-28 = 1 Hi1060 = B PM1550 = 5 780HP = 7 Special = 0	0.9mm Tube = 1 Special = 0	FC/PC = 2 FC/APC = 3 SC/PC = 4 SC/APC = 5 ST/PC = 6 LC/PC = 7 LC/APC = 8 LC/UPC = U Special = 0

* ***Fiber Type Selection Table***:

1	SMF-28	5	PM1550	M	MM 50/125µm
		D	PM1950	N	MM 62.5µm
		3	PM1310		
4	SM450	E	PM400		
A	SM1950	F	PM480		
6	SM600	G	PM630		
7	Hi780	H	PM850		
8	SM800	I	PM980		
9	SM980	J	PM780		
B	Hi1060	K	PM460		
C	SM400	L	PM405		

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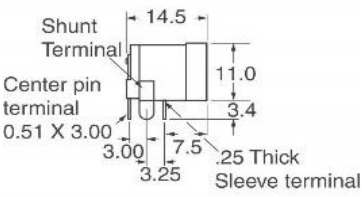
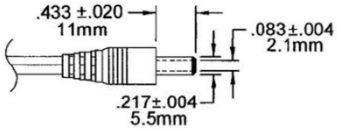
Power Connector

P/N:
Power Barrel Connector Jack 2.00mm ID (0.079"), 5.50mm OD (0.217") Through Hole, Right Angle



12V Wall Plug DC Power Supply Interface



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Operation Manual:

The MDTD is a plug-and-play unit designed for ease of use. All accessories required to operate the unit are included in the shipping package. Follow the steps below to get started:

1.Power Supply Plug the accompanying power supply into the MDTD unit.
2.Software Installation Load the driving software from the provided memory disk onto your computer.
3.USB Connection Use the provided USB cable to connect the MDTD to your computer.
4.Follow Instructions Once connected, follow the instructions in the software to begin using the MDTD.

Delay Line Control (via Windows GUI):

1. Set Target Position(mm/pSec)
   Simply enter the exact number of position(mm) or delay time(pSec) in the text box or drag the slider. Then, click on "Move" button to move the device to target position.

2. Homing the device
   If the number is not correct, the device needs a homing calibration. Simply click on "Home" button.

3. Scan Function
   Drag the slider to the target position/delay time, then click on "Set Ref x"(x = 1,2). Ref x (x = 1,2) will be set.

"Goto Ref x" Button will allow you to move the device to Ref x.

You can decide the step length for this scan and delay dwell time for each step. Repetition times can also be set. Click on "Start Scan" will start current scan process. "Pause Scan" will pause current scan, and you can resume the scan after it being paused.