

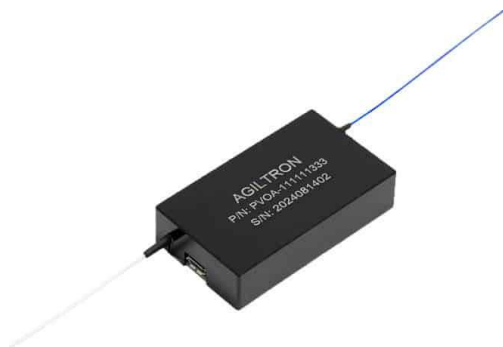
High Speed Variable Optical Delay – Piezo Driven

(up to 80 μm delay range, up to 5kHz, 1 μm accuracy, 500-2000nm SM, PM, MM, Bidirectional)



DATASHEET

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The PZTD Series High-Speed Variable Optical Time Delay delivers exceptional performance with high speed and low loss. It is compatible with all wavelengths and fiber types, including single-mode (SM), multimode (MM), and polarization-maintaining (PM) fibers. The device utilizes a piezo motor to change the separation between a pair of mating fibers, enabling time delays of up to 80 mm. The system features an integrated high-speed driver with a 0–5V analog SMA input and requires a 12V DC power supply. For convenience, a wall-pluggable power supply is included, making the unit easy to operate in various setups.

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]		0.5	5	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:

$$T = L/C = L \text{ (m)} / (2.9996 \times 10^8 \text{ m/s})$$

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 [\[click this link\]](#):

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Rev 01/01/26

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Mechanical Dimensions (Unit: mm)

Ordering Information (Part Number) System

	1	☐	☐	☐	☐	☐	☐	☐
Prefix	Type	PER	Wavelength	Max Delay	Optical Power	Fiber Type *	Fiber Cover	Connector ^[1]
PZTD-	Mini = 1	Non = 2 18dB = 1 25dB = 2 29dB = 3	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 17 μm = A 20 μm = 2 40 μm = 4 80 μm = 8 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

[1]. The default connector configuration uses fiber with 0.9 mm buffer protection. The connector cannot be installed directly onto bare fiber because the bare fiber is prone to damage during shipping. However, the connector can be assembled on bare fiber if a 3 cm protective loose tube is added for reinforcement. The customer may remove this protective tube after testing. The optical power handling of a standard connector is less than 0.5 W for SMF-28 fiber and decreases further for smaller-core fibers.

Fiber Type Selection Table:

1	SMF-28	5	PM1550	M	MM 50/125 μm
		D	PM1950	N	MM 62.5 μm
		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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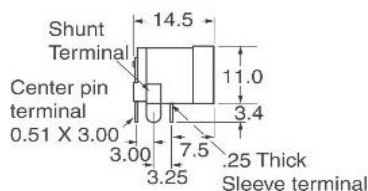
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Operation Instruction

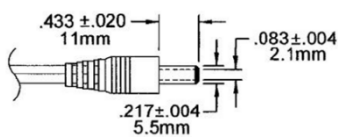
- Connection:
 - Connect the optical signal to either of the two fibers.
 - Connect the measurement instrument to the output of the other fiber.
 - Power Supply:
 - Plug in the provided wall-pluggable 12V DC power supply.
- Control Signal: Provide a 0–5V control signal to the SMA connector.
- Operation: The device will operate as specified in the datasheet.
- Support: For any issues, please email us.
- Warranty: The product includes a one-year warranty against manufacturer defects.

Power Connector (for OEM integration)

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:

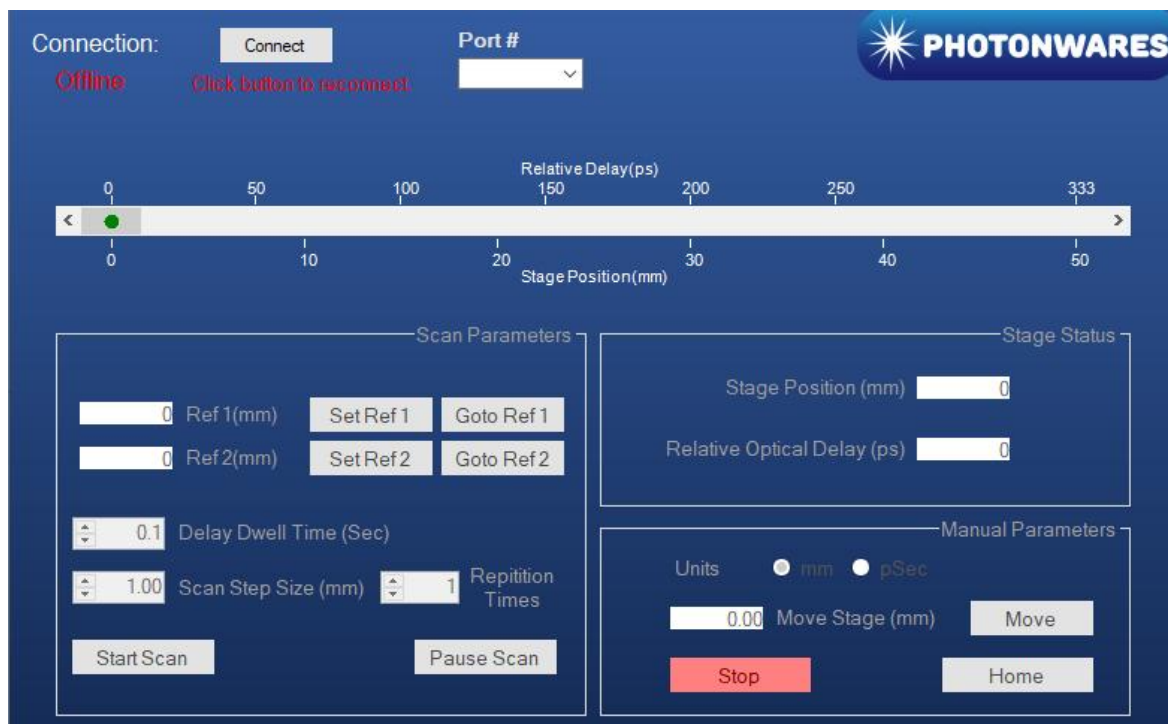
- 1.Power Supply** Plug the accompanying power supply into the MDTD unit.
- 2.Software Installation** Load the driving software from the provided memory disk onto your computer.
- 3.USB Connection** Use the provided USB cable to connect the MDTD to your computer.
- 4.Follow Instructions** Once connected,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



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