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# NanoSpeed™ SM Variable Photonic Time Delay

(Protected by U.S. patent 7,403,677B1 and pending patents)

## Product Description

The NSTD Series Photonic Time Delay generates variable time delay by selectively routing optical signals through N ( $\leq 8$ ) fiber segments whose lengths increase successively by a power of 2 to form a N bit digital delay line. The NSTD allows customers to splice each fiber loop, creating increments of  $\Delta T$ , up to the maximum value  $T$ . The switching between each loop is achieved using a patented non-mechanical configuration. The solid-state configuration eliminates the need for mechanical movement and organic materials. The device is designed to meet the most demanding switching requirements of ultra-high reliability and fast response time.



## Performance Specifications

NSTD Series Photonic Delay Line	Min	Typical	Max	Unit
Central Wavelength	850		1610	nm
Bit resolution <sup>[1]</sup>		4	8	
Insertion Loss <sup>[2]</sup>		4.0	5.2	dB
Cross Talk	20	25		dB
Switching Time (fall, rise)		300	400	ns
Repetition Rate <sup>[3]</sup>			100	kHz
Delay Time Range	ns		$\mu$ s	
PDL <sup>[4]</sup>		0.3	1.0	dB
Return Loss	45			dB
Fiber type	SM fiber or PM fiber			
Operating Temperature	0		60	°C
Optical Power Handling <sup>[5]</sup>		500		mW
Storage Temperature	-5		85	°C
Package Dimension <sup>[6]</sup>	19" mount rack			

[1]: TBD per customer's request.

[2]: Measured at 4-bit device, excluding the loss of long delay fibers. 1dB additional loss will be added per bit after 4-bit.

[3]: for each switching core.

[4]: Defined at 4-bit delay line

[5]: Measured at 1550nm.

[6]: Mount rack height will be determined based the final delay.

## Features

- High Resolution
- High Speed
- Non-Mechanical
- High Reliability

## Applications

- Phase-Array Antennas
- Instrumentation

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## Control Electronics

The standard electrical driver has USB and RS232 interfaces with Windows™ GUI. The power supply is AVC 100 ~ 240V.

The driver control interface can be customized to increase the delay repeat rate buy using TTL control through PIN connectors, please contact us.

## Ordering Information

NSTD-	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0	<input type="checkbox"/>
	Resolution	Wavelength	Configuration	Package	Fiber Type		Delay Range	Connector
	4 bits = 42 5 bits = 52 ..... 8-bits = 82 Special=00	850nm = 8 1060nm = 1 1310nm = 3 1550nm =5 Special=0	Standard = 1	19" rack = 2 Special = 0	SMF-28 = 1 HI1060 = 2 HI780 = 3 PM1550=5 PM980 = 9 Special=0	Bare fiber=1 900um loose tube=3	Custom	None=1 FC/PC=2 FC/APC=3 SC/PC=4 SC/APC=5 ST/PC=6 LC=7 Special=0

\*Product dimensions may change without notice. This is sometimes required for non-standard specifications.