

NanoSpeed™ Ultra-Fast 1x1, 1x2, 2X2 Fiber Optical Switch (4ns rise time)

(Protected by U.S. patents 7,403,677B1; 6,757,101B2; and pending patents)

Product Description

The NS Ultra-Fast Series fiber optic switch achieves ultra fast switching using patented electro-optical configuration, featuring low optical loss and wide temperature operation. The NS fiber optic switch is designed to meet the most demanding switching requirements of continuous operations over 25 years and non-mechanical ultra-high reliability.

The NS Series switch is controlled by 5V TTL signals with a specially designed electronic driver.



Features

- Solid-State
- High speed
- Ultra-high reliability
- Low insertion loss
- Compact

Performance Specifications

NanoSpeed P Series Switches		Min	Typical	Max	Unit
Insertion Loss ^[1]	1900-2200nm		0.8	1.8	dB
	1260-1650nm		0.6	1.0	
	960-1100nm		0.8	1.3	
	780-960nm		1.2	1.5	
	520 - 680nm		1.5	2	
Cross Talk ^[2]		18	25	35	dB
PDL (SMF Switch only)			0.15	0.3	dB
PMD (SMF Switch only)			0.1	0.3	ps
ER (PMF Switch only)		18	25		dB
IL Temperature Dependency			0.25	0.5	dB
Return Loss		45	50	60	dB
Optical Rise Time ^[3]			4	10	ns
Optical Fall Time ^[3]		8		500	ns
Driver Repeat Rate		DC	20		kHz
		DC	500		
Optic power Handling ^[4]	Normal power version		300		mW
	High power version			5	W
Operating Temperature	Standard	-5		75	°C
	Special version	-30		85	
Storage Temperature		-40		100	°C

[1] Measured without connectors. For other wavelengths, please contact us.

[2] Cross talk is measured at 500kHz, which may be degraded at the higher repeat rate.

[3] It is defined as the rising or fall time between 10% and 90% of optical intensities. This value is related to the driver choice

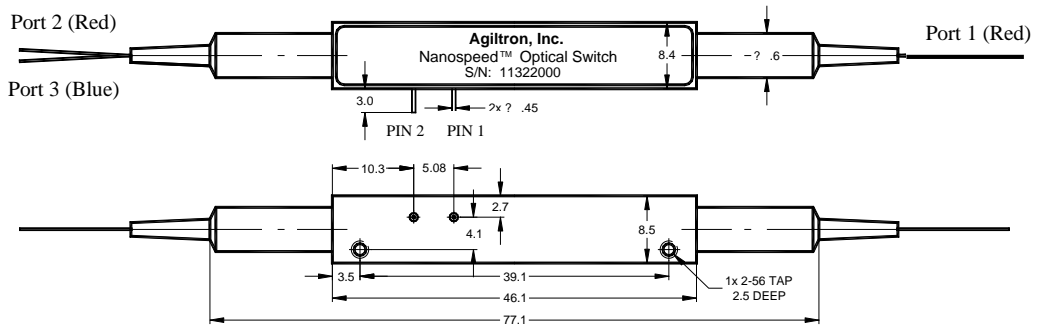
[4] Defined at 1310nm/1550nm. For the shorter wavelength, the handling power may be reduced, please contact us for more information.

Applications

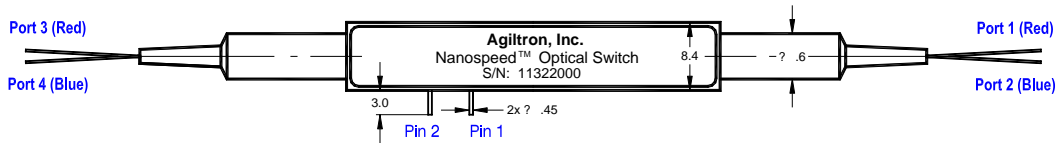
- Optical blocking
- Configurable operation
- Instrumentation

NanoSpeed™ Premium 1x1, 1x2, 2X2 Fiber Optical Switch

Mechanical Dimensions (Unit: mm)



1x2 switch



2x2 switch

Optical Path Driving Table

1x1 Optical Path	TTL Signal
ON for normally-open, OFF for normally-close	L (< 0.8V)
OFF for normally-open, ON for normally-close	H (> 3.5V)
* Valid only with SWDR series driver	

1x2 Optical Path	TTL Signal
Port 1 → Port 2	L (< 0.8V)
Port 1 → Port 3	H (> 3.5V)
* Valid only with SWDR series driver	

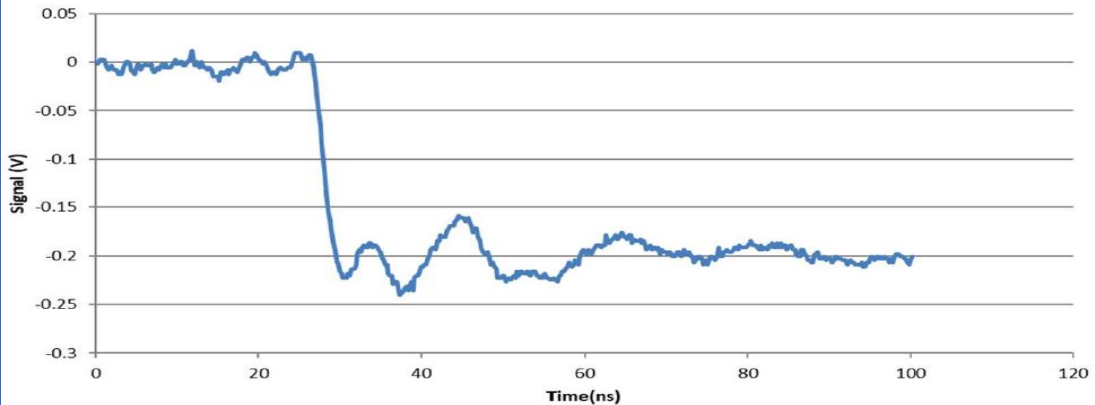
2x2 Optical Path	TTL Signal
Port 1 → Port 3, Port 2 → Port 4	L (< 0.8V)
Port 1 → Port 4, Port 2 → Port 3	H (> 3.5V)
* Valid only with SWDR series driver	

Driving Board Selection

Rise/Fall Time	Repetition Rate	Order Code
4ns/500ns	20Hz	1
8ns/8ns	50KHz	2
8ns/8ns	150KHz	3
8ns/8ns	300KHz	4
8ns/8ns	3000KHz	5

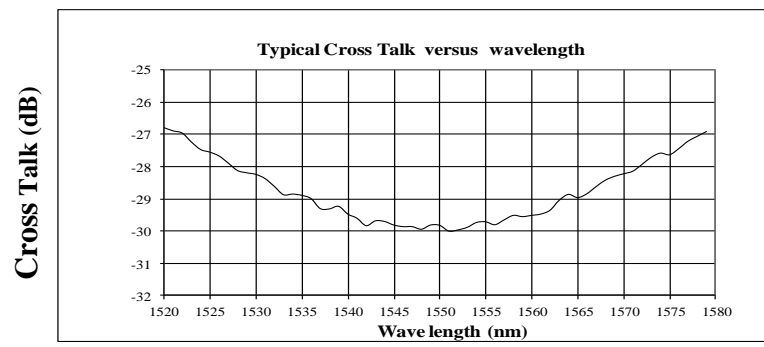
NanoSpeed™ Premium 1x1, 1x2, 2X2 Fiber Optical Switch

Typical Fast Switching Measurement



Note: optical trace

Typical Bandwidth Measurement



Ordering Information

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	Type	Wavelength	Temperature range	Repetition Rate	Fiber Type	Fiber Length	Connector	
NFSW = Normal power version	1x1=11 1x2=12 2x2=22	1060=1 2000=2 1310=3 1480=4 1550=5 1625=6 780=7 850=8 650=E 550=F 400=G 1565-1620=L Special=0	Standard=1 Large = 2	20Hz=1 50kHz=2 150kHz=3 300kHz=4 3000kHz=5	SMF-28=1 HI1060=2 HI780=3 PM1550/400=4 PM1550/250=5 PM850=8 PM980=9 Special=0	Bare fiber=1 900um loose tube=3 Special=0	None=1 FC/PC=2 FC/APC=3 SC/PC=4 SC/APC=5 ST/PC=6 LC/PC=7 LC/APC=8 Special=0	