

NanoSpeed™ Premium 1x1, 1x2, 2X2 Fiber Optical Switch (1MHz, -30°C to 85°C Capability)

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

Product Description

The NS Premium Series fiber optic switch is developed for high repeat rate and moderate driving voltage based on the standard NS series of switching technology. This is achieved using patented electro-optical configuration featuring clean fast response without ripples and temperature compensation for outdoor operation. The NSP 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 NSP Series switch is controlled by 5V TTL signals with a specially designed electronic driver having performance optimized for various repetition rate.

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	0.9	1.2	1.8	
	780-960nm	1.2 ^[1b]	1.6	2.5	
	520 - 780nm	1.5 ^[1b]	2.5	3.5	
Cross Talk ^[2]	Single stage	18	25	35	dB
	Dual stage	30	36	45	
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 transition time ^[3]		40	90		ns
Driver Repeat Rate	200kHz driver	DC	200		kHz
	1000kHz driver	DC	1000		
Optic power Handling ^[4]	Normal power version		300		mW
	High power version			5	W
Operating Temperature	Standard	-5		75	°C
	Large range 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.

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

[1b] NPLC version available for high power and low loss that incorporating fiber core enlargement (expensive).

Features

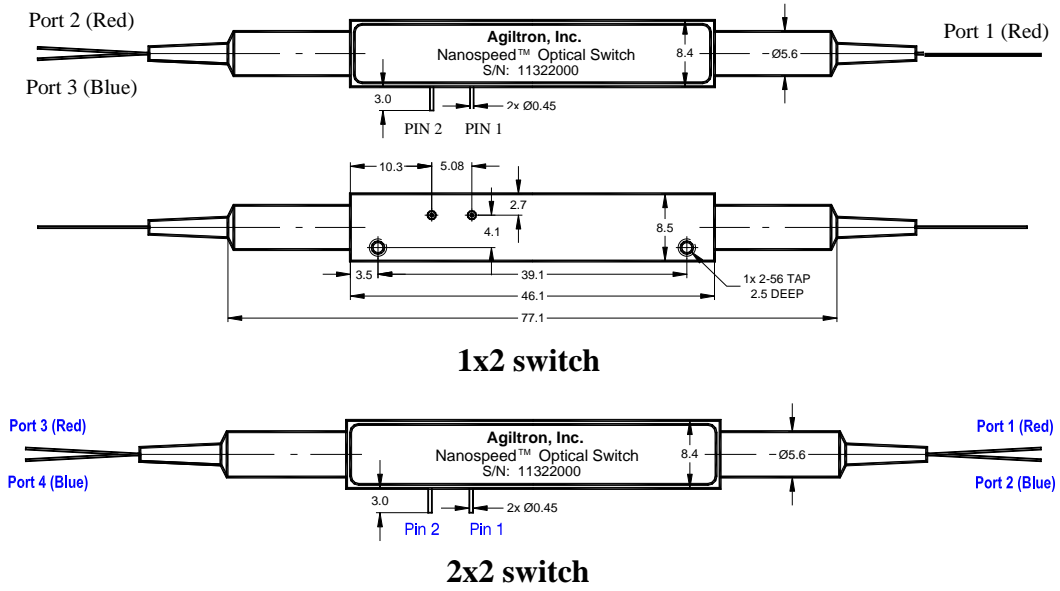
- Solid-State
- High speed
- Ultra-high reliability
- Low insertion loss
- Compact

Applications

- Optical blocking
- Configurable operation
- Instrumentation

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Mechanical Dimensions (Unit: mm)



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

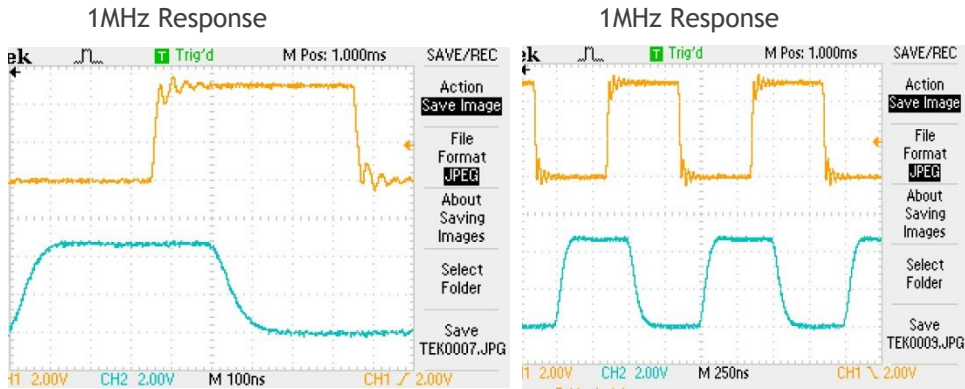
Maximum Repetition Rate	Part Number (P/N)
200kHz	SWDR-11a2M1111
1MHz	SWDR-11a2H1111

* Note: For customers that prefer to design their own driving circuit, they are responsible for the optical performance. For more technical information, please contact us.

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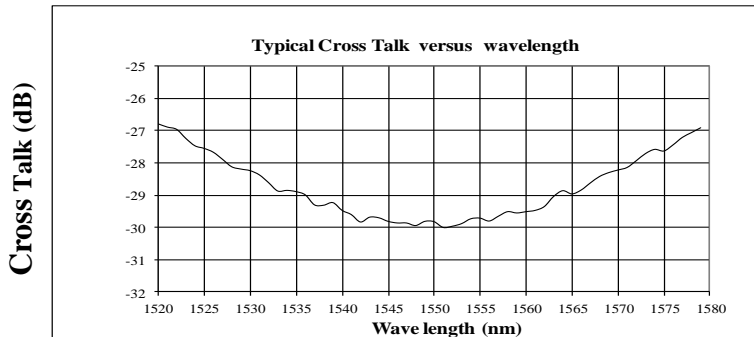


Typical Speed and Repetition Measurement



Note: Top Traces are electrical; Bottom traces are optical

Typical Bandwidth Measurement



Ordering Information

	Type	Wavelength	Grade	Repetition Rate	Fiber Type	Fiber Length	Connector ^[1]
NPSW = Normal power version	1x1=11 1x2=12 2x2=22	1060=1 2000=2 1310=3 1480=4 1550=5 1625=6 780=7	Single stage = 1 Dual stage = 2	200kHz=1 1MHz=2	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
NPHW = High Power version		850=8 650=E 550=F 400=G 1565-1620=L Special=0					
NPLC ^[2] = Large Core version for high power and low loss							

[1]: Please contact the sale about the high power connector for NPHW version.

[2]: NPLC version is available only for wavelength shorter than 780nm.