

1x1 nanosecond ultrafast optical switch



- **Product Description**

Idealphotonics introduced the cost-effective CrystaLatch 1x1, 1x2 CL series 1x1, 1x2 pigtail optical switch, which can connect the input optical channel and the selected output optical channel to achieve switching between different optical paths. The switching between optical paths is based on the patented structural design and electrical signal drive. This product has a unique locking function to ensure that the optical path still operates stably and reliably after power failure. The all-solid-state design CL series 1x1, 1x2 pigtail optical switch has the advantages of low insertion loss, high

extinction ratio and good repeatability. The product has a fast response speed and can meet the needs of most optical switch application fields, achieving uninterrupted and trouble-free transmission of the optical path, and has excellent adaptability to complex environments such as mechanical vibration, shock, and temperature shock.

● Product features

No moving parts, long service life Ultra-fast switching speed、 Extremely stable latch mode、 Low power consumption、 One-end fiber outlet - easy to wind、 Extraordinary reliability and stability

● Part Number

MP-OSW-1550-NS300-11-M

● Application area

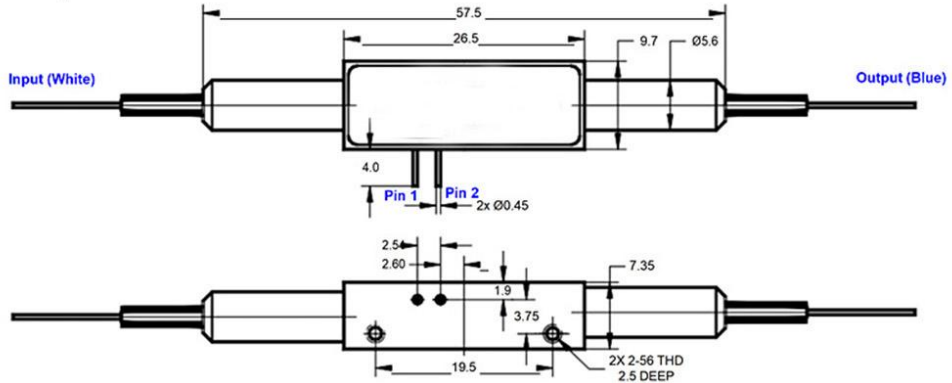
Optical path switching、 High-speed protection system System monitoring、 Test and measurement、 Fiber optic sensing system

● Core parameters

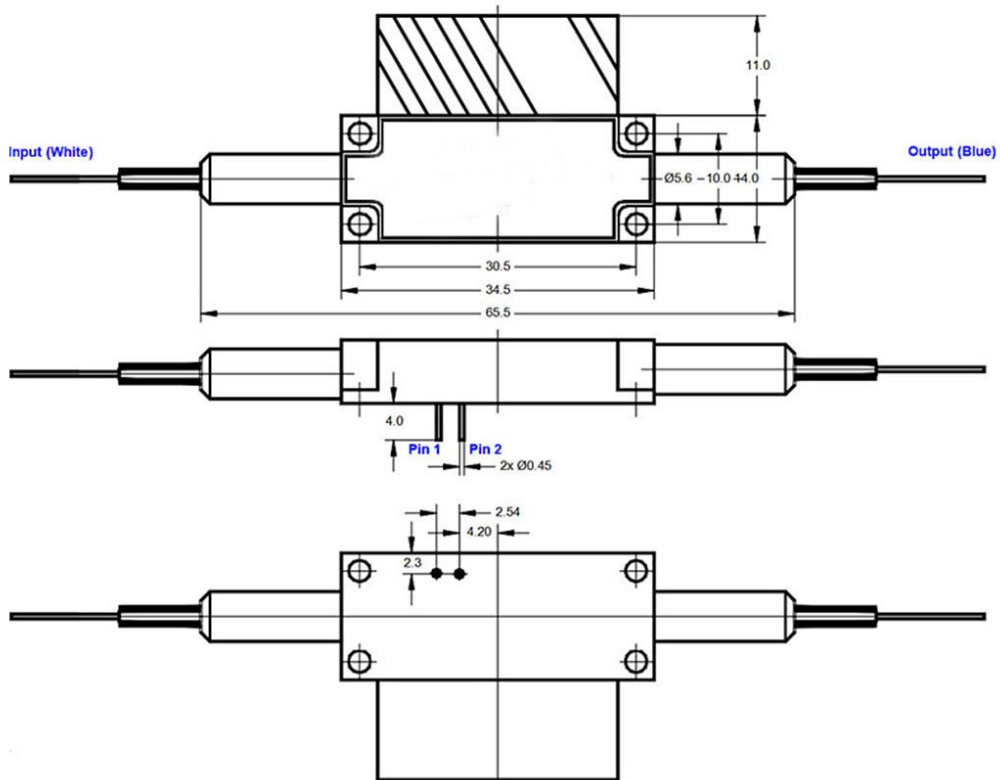
Wavelength	Response Speed
1550nm	300ns

● Dimension Drawing

Normal power version



High power version



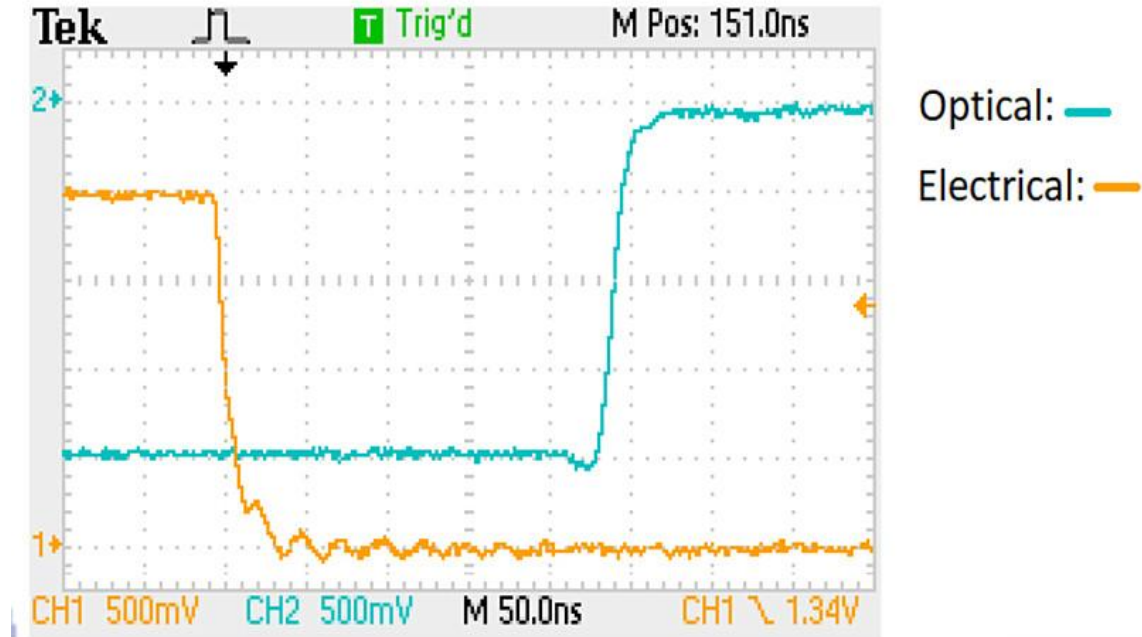


● General Parameters

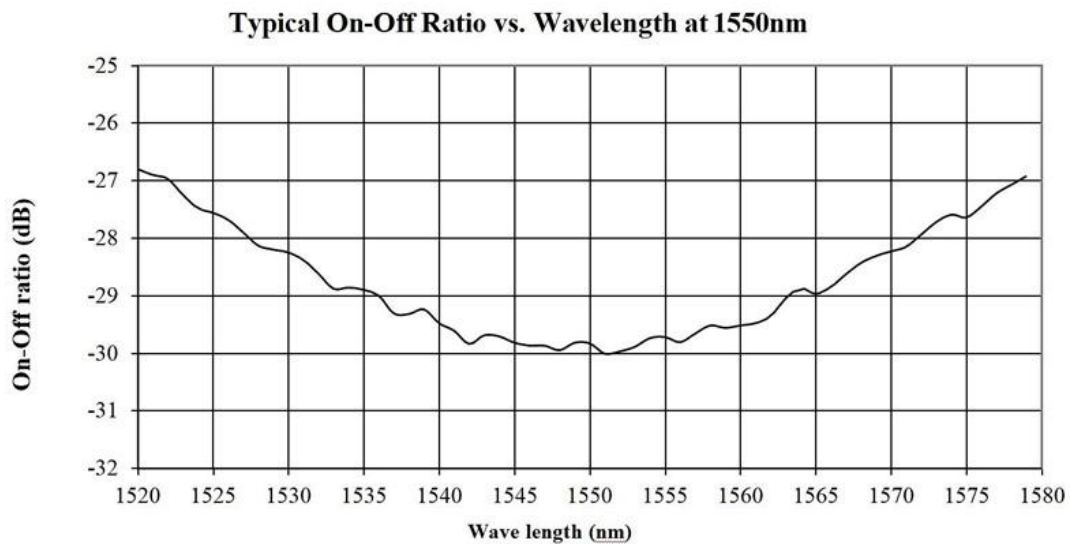
Parameters

NS Series 1X1 Optical Switch/Modulator		Min.	Typical	Max.	Unit
Operating wavelength		780		1800	
Insertion loss	1260-1800nm		0.6	1.0	dB
	960-1260nm		0.8	1.3	
	760-960nm		1.0	1.5	
Isolation		20	25		dB
Polarization-dependent loss			0.15	0.35	dB
Insertion loss temperature dependence			0.25	0.5	dB
Polarization mode dispersion			0.1	0.3	ps
Return loss		45	50		dB
Response speed (rising edge, falling edge)				300	ns
Repetition frequency		DC	2k		Hz
Operating temperature		-5		70	°C
Optical power limit			300	500	mW
Storage temperature		-40		85	°C
Package size		57.5x7.35x9.7			mm

Typical response speed measurements



Typical bandwidth measurements



Optical path driver table

Optical Path	TTL Signal
ON for normal-open or OFF for normal-dark	L (< 0.8V)
OFF for normal-open or ON for normal-dark	H (> 3.5V)

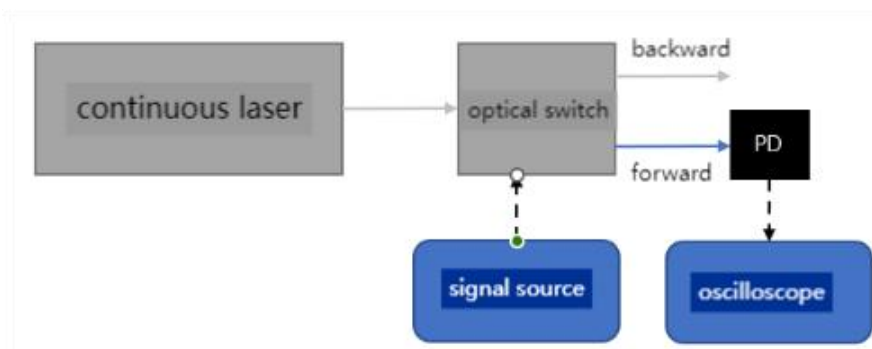
Driver circuit board

Maximum Repetition Rate	Part Number (P/N)
5kHz	SWDR-11a251111
100kHz	SWDR-11a261111
500kHz	SWDR-11a291111

Remarks: For customers who design their own drive circuits, they are responsible for the optical performance. Please contact us for more technical information.

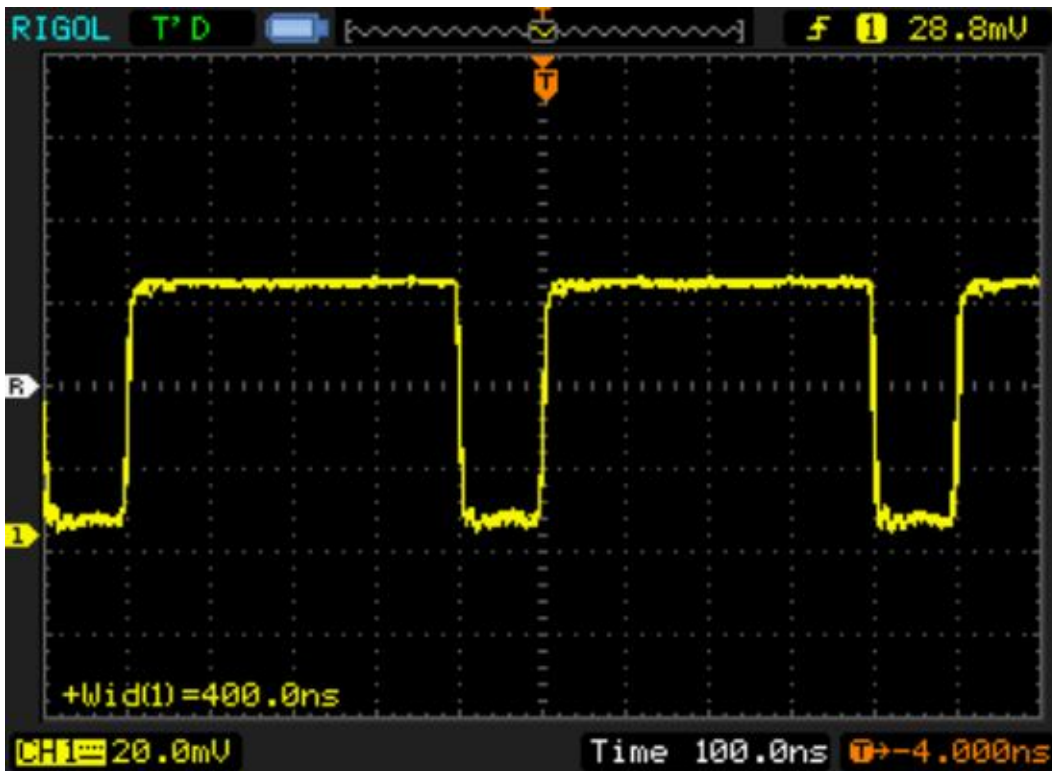
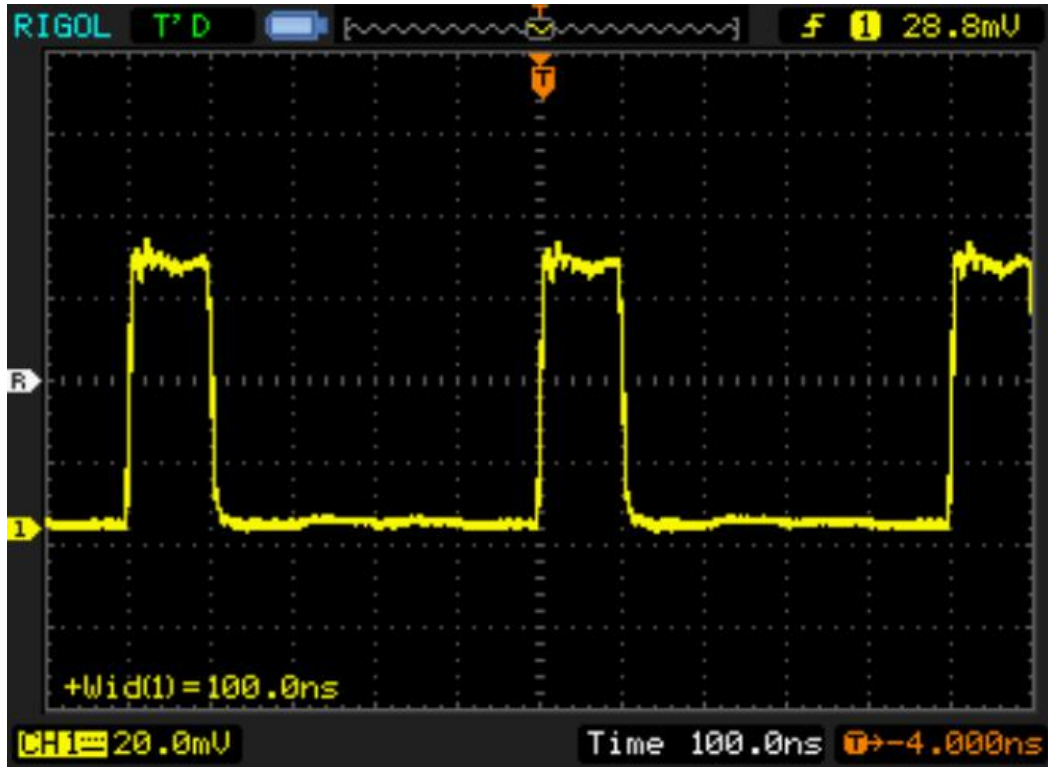
Microphotons 1064nm Electro-Optical Switch

Instructions





1. Power on the optical switch module and the cooling system starts working;
2. Connect the 1064nm laser to the input end of the optical switch. At this time, it can be observed that the forward output end does not pass light, but the reverse output end passes light;
3. There is an SMA input port in the optical switch module, which is the input end of the switch modulation signal and recognizes the TTL level. When the input is low level, the light is output from the reverse port, and when the input is high level, the light is output from the forward port. Connect it to the signal source and input the pulse signal. Take the signal in the video as an example: frequency 2MHz, high level 1.6V (output impedance 50 ohms), low level 0V, pulse width 100ns;
4. Connect PD to the forward output end to collect the pulse light signal and compare it with the signal of the signal source. The reverse output end will get an inverted result;





Ordering Information

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	Type	Wavelength [1]	Configuration	Fiber Type		Fiber Length	Connector [2]
NSSW=N Normal Power	1x1=11	1060nm=1	Normally open / Single Stage=11 Normally Opaque/ Single Stage=21 Normally open/Dual	SMF-28=1	Bare Fiber=1	0.25m=1	None=1
NHSW=2 W		2000nm=2	Normally Opaque/ Dual Stage=12	HI1060=2	900um Tube=3	0.5m=2	FC/PC=2
NHHW=5W		1310nm=3	Normally Opaque/ Dual Stage=22	HI780=3	Special=0	1.0m=3	FC/APC=3
		1410nm=4		PM1550=5		Special=0	SC/PC=4
		1550nm=		PM980			SC/APC



		5		=9			=5
		1625nm=		Special			ST/PC=
		6		=0			6
		850nm=8					LC/PC=
							7
		780nm=7					Duplex
							LC=8
		650=E					LC/APC
							=9
		550=F					Special
							=0
		400=G					
		Special=					
		0					

F&Q

Q: Does NS device drift overtime and temperature?

A: NS devices are based on electro-optical crystal materials that can be influenced to a certain range by the environmental variations. The insertion loss of the device is only affected by the thermal expansion induced miss-alignment. For extended temperature operation, we offer special packaging to -40 -100 OC.



The extinction or cross-talk value is affected by many EO material characters, including temperature-dependent birefringence, V_p , temperature gradient, optical power, at resonance points (electronic). However, the devices are designed to meet the minimum extinction/cross-talk stated on the spec sheets. It is important to avoid a temperature gradient along the device length.

Q: What is the actual applying voltage on the device?

A: 100 to 400V depending on the version.

Q: How does the device work?

A: NS devices are not based on Mach-Zander Interference, rather birefringence crystal's nature beam displacement, in which the crystal creates two different paths for beams with different polarization orientations.

Q: What is the limitation for faster operation?

A: NS devices have been tested to have an optical response of about 300 ps. However, practical implementation limits the response speeds. It is possible to achieve a much faster response when operated at partial extinction value. We also offer resonance devices over 20MHz with low electrical power consumption.