

CrystaLatch™

1x1, 1x2 Series Fiber Optic Switch

(Full aerospace, OutSpace, and Undersea qualified)
(SM, PM, High Power, Bidirectional, Isolator/Circulate Build-in)

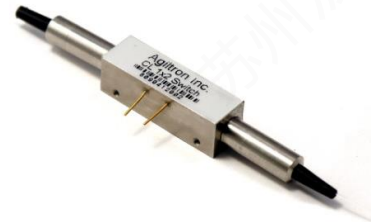
(Protected by U.S. patents 7224860, 6757101, 6577430 and pending patents)

Product Description

The CL 1x1, 1x2, 2x1 Series Fiber Optical Switch redirects an incoming optical signal into a selected output fiber, achieved using patented non-mechanical configurations and activated via an electrical control signal. Latching operation preserves the selected optical path after the drive signal has been removed. The all solid state CL 1x1,1x2 fiber optic switch features low insertion loss, high extinction ratio, high channel isolation, and extremely high reliability and repeatability. It is designed to meet the most demanding switching requirements of continuous operation without failure, over 25-year longevity, operation under shock/vibration environment and large temperature variations, and fast response time.

The switch also has build-in circulator and isolator functions. Electronic driver is available for this series of switches.

The magneto-optical crystals used in the CL switches have no fatigue nor drift effect.



Performance Specifications

CL 1x1, 1x2 Series Switch	Min	Typical	Max	Unit
Operation Wavelength ^[1]	1520	1550	1580	nm
	1295	1310	1325	
Insertion Loss ^[2]		0.7	1.0 (1.2 ^[4])	dB
Cross Talk ^[2]	Bidirectional Series	35	50	dB
	Unidirectional Series	40	50	dB
Return Loss ^[2]	50	55		dB
PDL (SM Series)		0.1	0.2	dB
Extinction Ratio (PM Series)	18	25		dB
Optical Switching Speed (rise, fall)	5		10	µs
Repetition Rate		2K		Hz
Polarization Mode Dispersion		0.1	0.2	ps
Operating Temperature	-5		70	°C
Storage Temperature	-40		85	°C
Optical Power Handling ^[3]		300	500	mW
			2	W
Package Dimension	58.2L x 8.4W x 8.4H			mm
Durability	10 ¹⁵			Cycles

[1]. Agiltron can achieve same SPEC at L band.

[2]. Measured without connectors.

[3]. Special operating temperature -40 to +85 °C is available with Ordering Information.

[4]. For special operating temperature, lower than -20 °C and higher than +70 °C.

Features

- Solid-State high speed
- Ultra-high reliability
- Fail-safe latching
- Low insertion loss
- Direct low voltage drive
- Compact
- Low cost

Applications

- Optical channel blocking
- Configurable Add/Drop
- System monitoring
- Instrumentation



Revised on 02/13/23

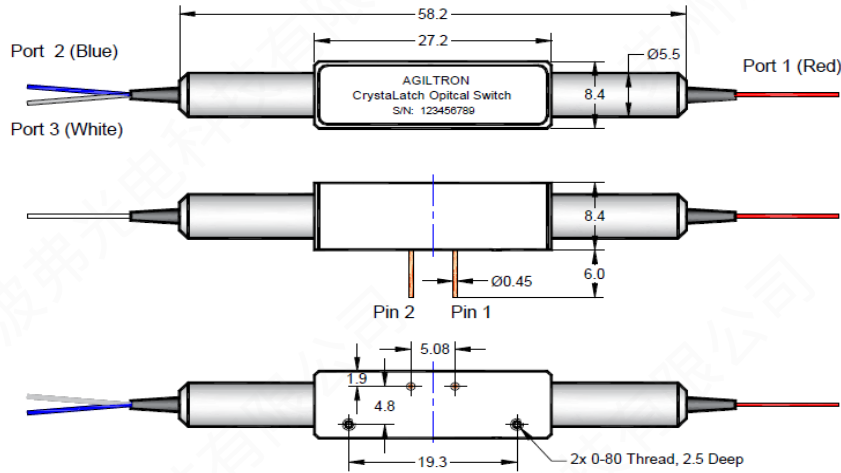
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Mechanical Dimensions (Unit: mm)



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

Electrical Driving Information

The switch is actuated by applying a voltage pulse. Applying one polarity pulse, one light path will be connected and latched to the position. Applying a reversed polarity pulse, another light path will be connected and latched to the position after pulse removed.

Parameter	Minimum	Typical	Maximum	Unit
Drive Voltage	4.5	5	5.5	V
Resistance (each Pin Group)	15	18	22	Ω
Pulse Duration	0.2	0.3	0.5	ms

Driving kit with USB and TTL interfaces and Windows™ GUI is available. We also offer RS232 interface as an option – please contact Agiltron sales.

Bidirectional Series 1x1, 1x2 or 2x1 Switch Driving Table

Optical Path		Pin 1	Pin 2
1x1	1x2 or 2x1		
Port 1 ↔ Port 2	Port 1 ↔ Port 2	-	+
Dark	Port 1 ↔ Port 3	+	-

"+" is 4.5 ~ 5.5 V pulse, typical pulse is 5 V. "-" is ground.

Unidirectional Series 1x1, 1x2 Switch Driving Table

Optical Path		Pin 1	Pin 2
1x1	1x2		
Port 1 → Port 2	Port 1 → Port 2	-	+
Dark	Port 1 → Port 3	+	-

"+" is 4.5 ~ 5.5 V pulse, typical pulse is 5 V. "-" is ground.

Unidirectional Series 1x1, 2x1 Switch Driving Table

Optical Path		Pin 1	Pin 2
1x1	2x1		
Port 2 → Port 1	Port 2 → Port 1	+	-
Dark	Port 3 → Port 1	-	+

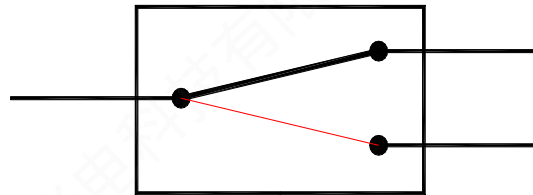
"+" is 4.5 ~ 5.5 V pulse, typical pulse is 5 V. "-" is ground.

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Function Diagram



CL 1x2 Series Switch

Ordering Information

Prefix	Type	Wavelength	Switch	Package	Fiber Type	Fiber Cover	Fiber Length	Connector ^[9]
CLSW- ^[1]	1x1 = 11	1310 = 3	Dual Stage ^[10] = 2	Standard=3	SMF-28=1	Bare fiber=1	0.25m=1	None = 1
CLPM- ^[2]	1x2 = 12	1550 = 5	Special = 0	-40~+85°C=A	PM 1550=B	900 um tube=3	0.5m=2	FC/PC = 2
CLHP- ^[3]	2x1 = 21	Special = 0		-40~+70°C=B	PM 1310=D	Special=0	1.0m=3	FC/APC = 3
CLBD- ^[4]	Special = 00			-20~+85°C=C	Special=0		Special=0	SC/PC = 4
CLPH- ^[5]				-20~+70°C=D				SC/APC = 5
CLHB- ^[6]				Special=0				ST/PC = 6
CLPB- ^[7]								LC/PC = 7
CPHB- ^[8]								Duplex LC = 8
								Special = 0

[1]. **CLSW**: CrystaLatch 1x1, 1x2 SM SWITCH.

[2]. **CLPM**: CrystaLatch 1x1, 1x2 PM Switch.

[3]. **CLHP**: CrystaLatch 1x1, 1x2 SM High Power Switch.

[4]. **CLBD**: CrystaLatch 1x1, 1x2 SM BIDIRECTIONAL Switch.

[5]. **CLPH**: CrystaLatch 1x1, 1x2 PM High Power Switch.

[6]. **CLHB**: CrystaLatch 1x1, 1x2 High Power Bidirectional Switch.

[7]. **CLPB**: CrystaLatch 1x1, 1x2 PM Bidirectional Switch.

[8]. **CPHB**: CrystaLatch 1x1, 1x2 PM High Power Bidirectional Switch.

[9]. There isn't any connector in high power switches. Please contact us for high power connectors.

[10]. Using two switching cores for high on/off ratio